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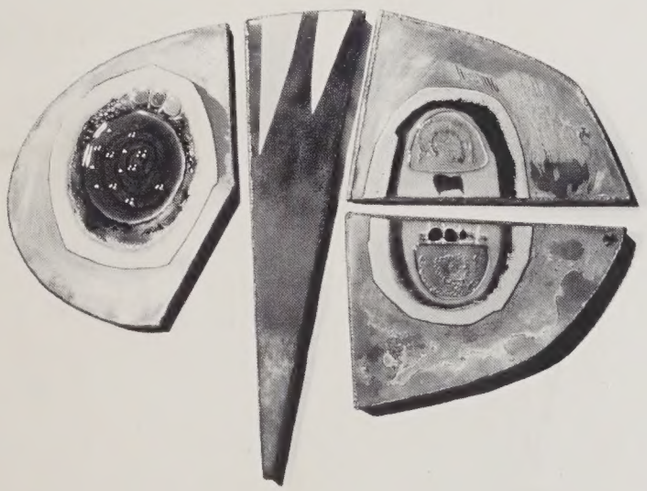

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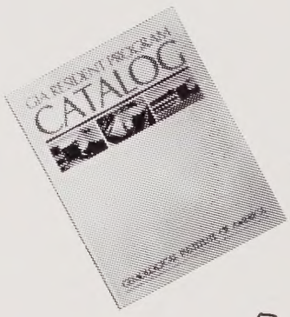

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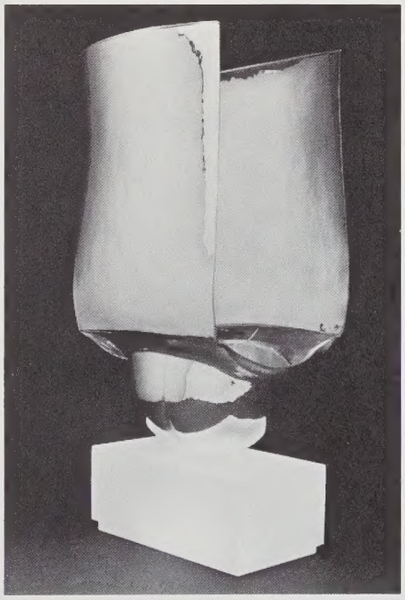

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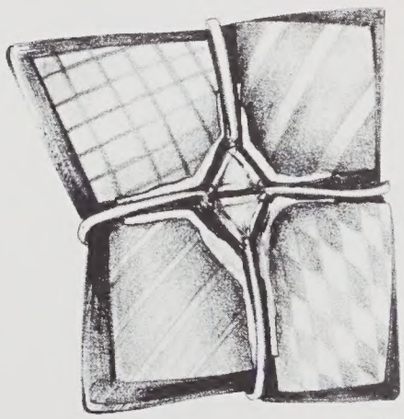

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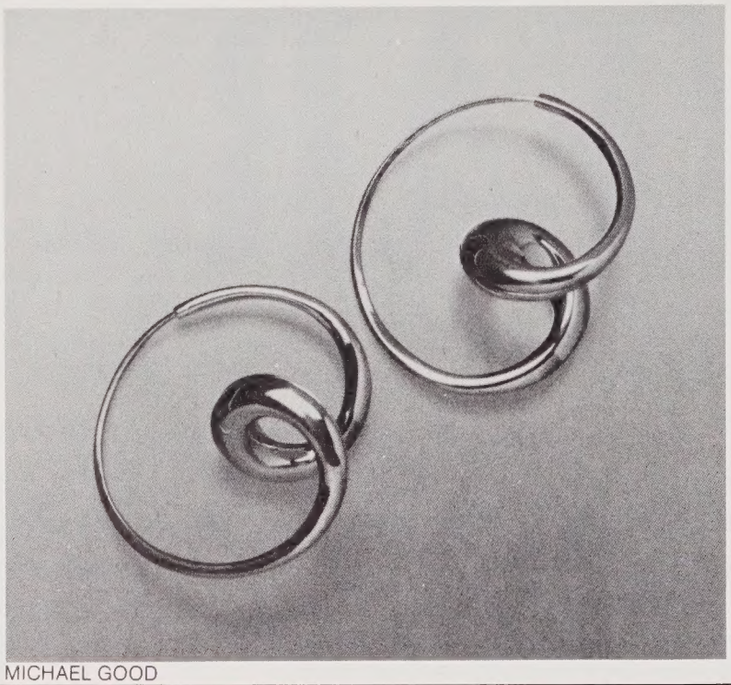

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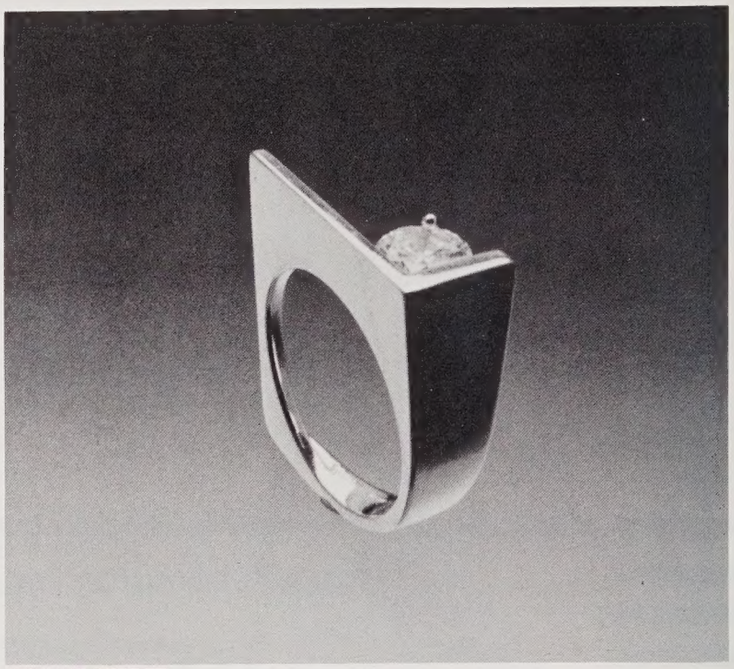

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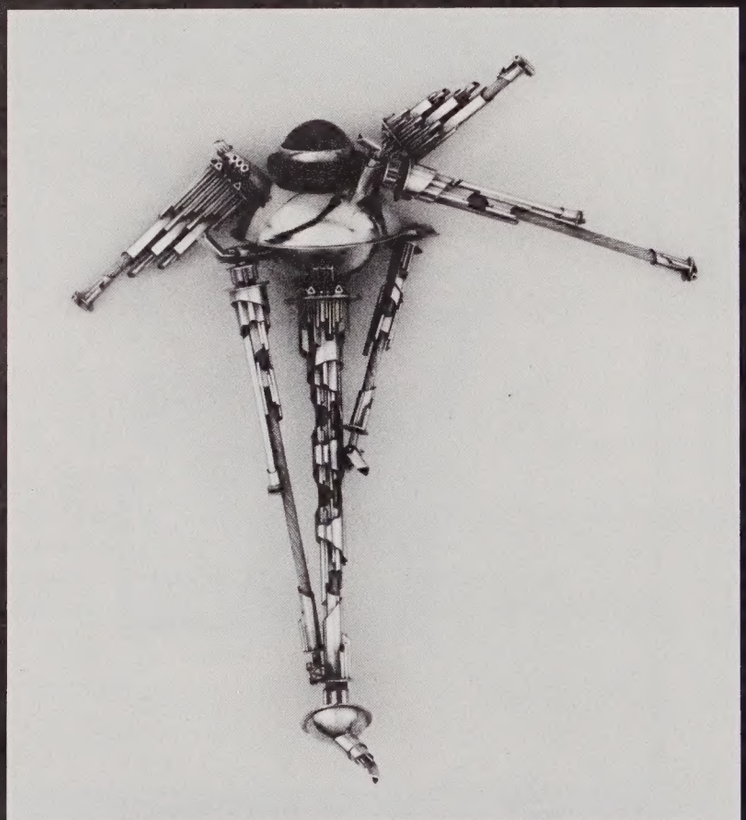

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Cover
Dorothy Sturm, *The Egg of Happiness,* enamel and glass on multiple copper welded shadow boxes, 24 x 36", 1975

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Editorial

I am often visited by metalsmiths who come to New York City to present their work for the first time to art galleries. And after their visits I often see disappointment, even bitterness.

Here are a couple of recent examples. Last spring I accompanied an artist-metalsmith visiting galleries. He arrived at one, unannounced, and politely inquired of the receptionist if the owner was available. By chance she was there and requested that the work be left in the gallery for an hour. The metalsmith, not willing to wait, declined—and argued that since the gallery owner was in, perhaps she could take a quick look at the work on the spot. The gallery owner, already annoyed, refused. The metalsmith pressed once more. "All right, I'll look right now," she snapped, "but that won't allow me enough time to give it proper consideration." After glancing at one piece and a drawing, she pushed the work away and said, "No, not for us."

On another occasion at an informal dinner, I casually mentioned to a craftsman that a young gallery owner was a friend. At the end of the dinner, the craftsman asked if I would call this gallery for him to get the owner to consider his slides. Although this was a logical request and I might have considered making the call, it wasn't appropriate because the gallery showed work vastly different from his. I was surprised that the craftsman was not aware of this.

Clearly, something was not right in both cases. Feelings were hurt; there was confusion and misunderstanding. What went wrong? The procedure for submitting work to art galleries follows the rules of good manners. Call first. Never arrive unannounced and expect someone to do something for you. Further, consider your expectations seriously. It is rare that an artist is discovered through submission of slides. A gallery looks at slides primarily to keep up-to-date and set up communication with artists. What you can expect is that professionals will be looking at your work. But they will not give detailed analyses or sit down and talk with you.

Good New York galleries are beseiged with slides, work and personalities daily. Some set aside a certain day each week for reviewing new work; some ask for work to be left; some request slides be mailed. Find out in advance the gallery's policy, and don't expect to be seen personally by the owner. Just as you would not like continual interruptions in your studio, a gallery owner cannot take time to talk with everyone who comes in off the street. Although a gallery is open to the public, it is a private business, not a museum or service organization. And the business is usually run by a small staff on a tight budget. Time is extremely important to them. Leave your slides and a telephone number where you can be reached to pick them up, or leave a self-addressed, stamped envelope with them.

Besides finding out about the review policy and making provisions for the return of slides, you should research the gallery itself: what kind of work it carries, how successful the type of work you do has been for it in the past. Talk with artists in its stable. Evaluate your own work with friends, peers and other artists before approaching a gallery. Then, when you can honestly say to yourself that your work is ready for a professional eye, make your submission. So much the better if an exhibiting artist will introduce you.

A relationship between gallery and artist depends on trust. This is as tangible or intangible as that implicit in a marriage contract or in any agreement between two people who work together. It does not mean sales, although that is welcome on both sides. The test of public exhibition is a vital gauge of the value of any work of art. And galleries are important for this purpose.—SB

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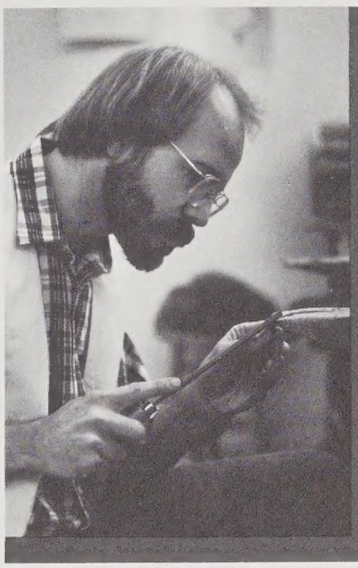

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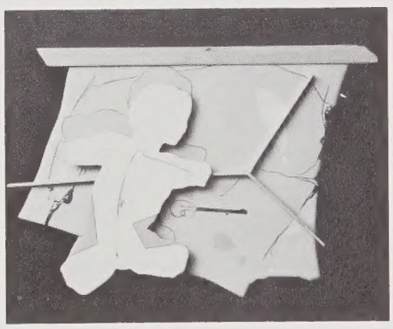

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Letters to the Editor

Many letters received are of interest to the entire readership. Unless stated otherwise, all letters received may be included in the "Letters to the Editor" section. Address letters to the editor to: Sarah Bodine, Editor, *Metalsmith,* 1 Penn Lyle Road, Princeton Junction, NJ 08550. Letters should be signed and a return address given. The editors reserve the right to edit for publication.

Dear Editor:
My disagreement with Bruce Metcalf's article *Techniques for the Head* (Winter 83) is intuitive rather than intellectual. That is, I don't disagree with specific definitions or propositions. Rather, I have a sense that it doesn't go far enough, that it misses a couple of important points.

Metcalf's sense of what crafts (and therefore craftsmen) are all about is more closely related to fine arts than mine. For instance, early in the article he says there are several definitions of what makes a piece of work "good." One element he puts forward as something that most of us could agree on is personal expression, the stamp of the individual. In this theme he cites as examples Matisse, Picasso, Stella and Caro. I don't think craftwork is always meant to express a personality (or a time, a culture, or anything else, externally). And I think that this is where we part company.

Before going on let me emphasize that my slant on this has nothing to do with a rivalry or question of superiority between craftwork and fine arts. There is no question that in terms of criticism, scholarship, curatorial practice, exhibition priorities and investment counseling, crafts have been given the short end of the stick. There is similarly no question that this is wrong and that the situation should be corrected. I think we are in agreement on all that; it has no bearing on the discussion at hand.

Think for a minute of metalsmithing in its largest definition. Call up images of Columbian gold statuettes, Egyptians beads, Etruscan granulation, Chinese Bells. Think of Fabergé eggs, Revere holloware, medieval reliquaries and Pearson flatware. This kind of work is moving, vital and noble. These works are "good." And yet there seems to be little of the personality of the maker apparent.

I think the craftsman expresses himself in a more subtle way than this article would indicate. Take for an example a Greek gold earring of exacting granulation. Picture a stylized floral motif: something pretty, universal, impersonal. I can think of such a pair in the Boston Museum of Fine Arts, and they practically scream with "statement" (if that's the right word).

They attest to a deeply rooted conviction in the value of life, the honor of learning a craft and of repeating a technique until it is perfected. They speak of confidence in the future of the race and illustrate a sophisticated understanding of time. Let me explain myself more fully:

To aspire to beauty is to either live in a pleasant world or hope for one. A cynic doesn't make objects with care for their long-term appreciation. (I think for example of the transient objects of Dada.) In a world of shallow, self-seeking people, beauty has little value. So in making these beautiful earrings, the craftsman has asserted quite a bit.

Work like this shows technical mastery. That is only possible under certain conditions. It requires a studio, tools, a hierarchy or workers, a willingness on the part of the advanced to instruct the novice and an economic stability that will underwrite all of this. By standing for all this, the earring makes a statement about processes, and the flow of life.

One of the joys of holding (owning) a piece of work is the time it embodies. If I could hold those earrings in my hand—ah, don't I wish!—I would be holding a portion of a life that was lived 2000 years ago. I would be holding the hours and days and weeks that went into those earrings, a kind of crystallized chunck of time. This sense of time and man's relationship to it is magnificently expressed in those earrings.

These are some of the ways, then, that a craftsman expresses himself. This kind of communication, this special form of expression, is inherent in crafts and ennobles them. Compared to communication on this plane, personal expression in terms of dream images or childhood associations is meager. This article, as it discusses design sources, deals with a tip of the iceberg of expression. It isolates one approach—a direct almost literary approach—in that the objects are to be "read." This is valid, but I think it is one approach among many.
—Tim McCreight

Dear Editor:
I recently read Bruce Metcalf's article in the Winter 83 issue of *Metalsmith* while waiting to go hit the flea markets and junk stores in Springfield, Missouri. It was a short article, but it was also a short wait. Some of the statements (especially those about creativity and the creative process) were most curious.

The article implied that in part, the degree of creativity in an artist may be determined by the choice of sources and the degree of departure from those sources. Therefore it seems that to be creative the artist should choose influences not common to the media or vehicle they work in. Creativity is further enhanced by using these sources in a murky and obscure manner. It is hoped that the end result will be something nobody has seen before. Evidently the result of this process is not so important, the method of judging success or failure was not discussed.

An assertion is made that the creative artists are those whom the majority copy. An end justifying or qualifying the beginning. This statement ignores the factors of capitalization, historic accident, media exposure, etc., that are important components of artistic "success."

I was under the unsophisticated notion that creativity was a process almost impossible to structure. But now with a creativity formula I can take the piles of fiesta ware I saw today and work them into a series of small pins. If a lot of people copy the work it will become great art.

All kidding aside, it *is* good to see a discussion of esthetics and creativity, the *software* of our field, in *Metalsmith*. I hope to see more of it in the future.
—Phillip Baldwin

Dear Editor:
Philip Morton's article on Hephaestus in the Winter 83 *Metalsmith* was informative and fascinating, but may I correct the opening sentence: The statue on the stairs at Goldsmiths' Hall is of St. Dunstan, the patron saint of English goldsmiths, who was a real not a mythical person, even if some of his exploits were aprochryphal.
—Peter Gainsbury
Director,
Design and Technology
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Dear Editor:
I was impressed by and interested in your comments re criticism (Edirotial, Winter 83) and find them very apt. I think the world of art (crafts included where the objects make it appropriate) gets very flabby when critics do. In New Jersey, one of the guys who writes for the NJ section of *The New York Times* is notorious for rewriting press releases rather than reviewing the shows. But I agree that it's the poetry of a work that matters, and technique only becomes primary as it inhibits or enhances that message. The strength and value of your magazine will grow as your editorial stance becomes known and respected. I'm not sure, however, that an artist should count on a critic for perspective of any kind. I expect an artist to be further out in front, more determined, more hell-bent after a self-directed esthetic. I am much more resentful and suspicious of those who worry about and cater to critics, even good ones, especially as an individual's style changes to suit the critical mood of a period. I think growth comes as an artist has faith in his vision and goes about trying to communicate it without any debt to my eye, or your eye. If it's honest, it may not be beautiful, but it's a damn sight more valuable than the technically facile, glib, fashion-oriented, impersonal flash. Maybe I am interpreting the artist as well out of the classroom, and I would also admit that there are endless discussions possible on the techniques, ethics, philosophy, ad infinitum, of criticism itself. I hope you'll ask me to participate again.
—Carolyn Kriegman

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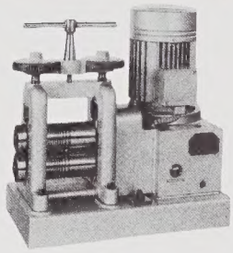

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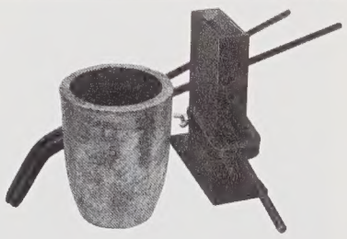
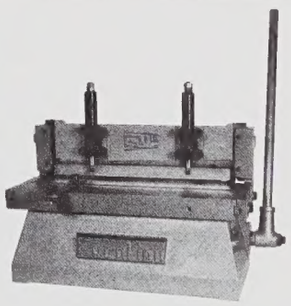
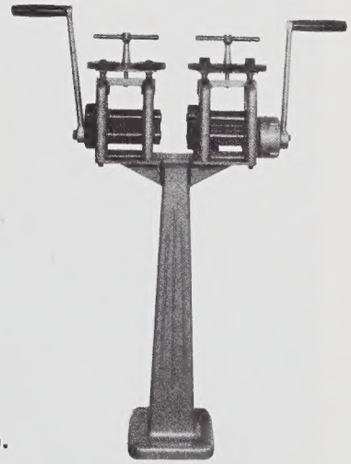


Bench Model Powered Rolling Mill
120mm rolls for flat and wire rolling with half round or embossing side rolls, makes this powerful 1 H.P. mill a great asset for your precious metal production.



IRM Model Duplex R Double Head Rolling Mill for Plate and Wire
Width Reducer: 100mm x 6 mm. Weight: 141 lbs. this unit is available with embossing rolls and is in stock.



IRM

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401.722.7811

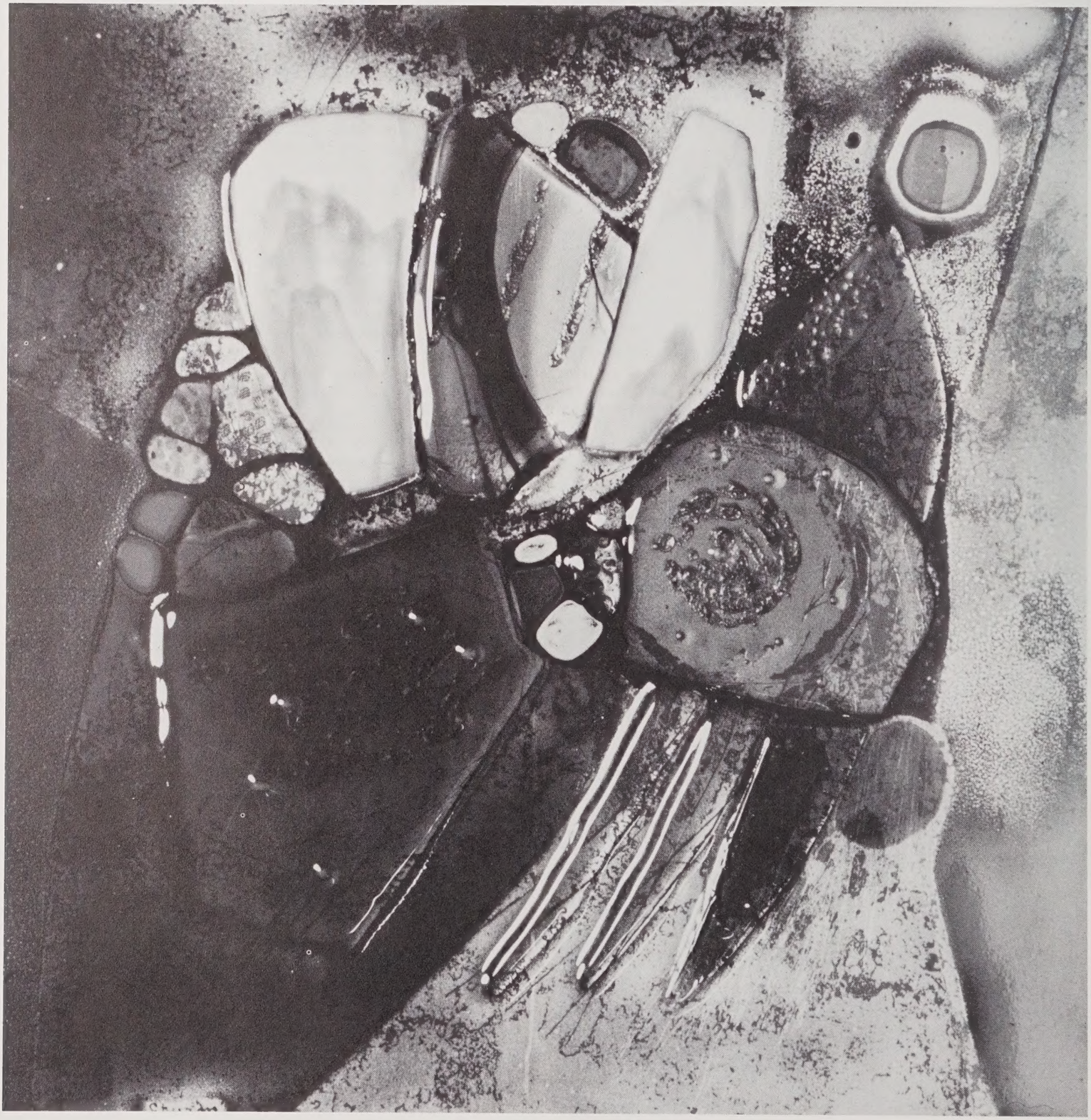
Master Metalsmith

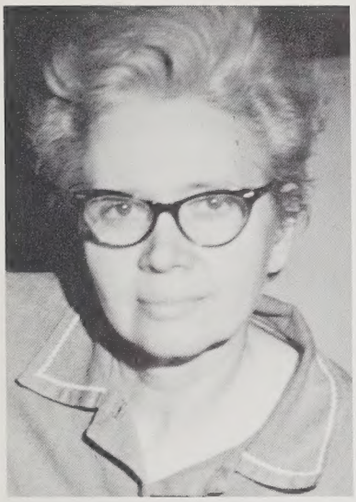
Dorothy Sturm

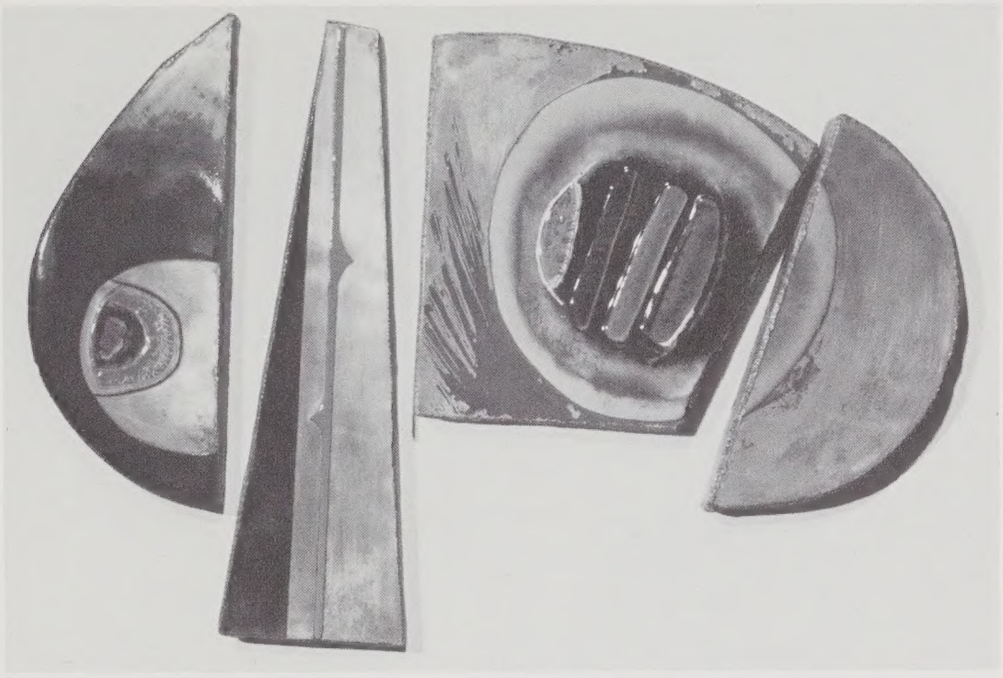
by Karen Blockman and Kathleen Doyle

Compositions in Red, enamel and glass on copper, 12 x 12″, 1968. **Opposite page right** *The Dark Side of the Moon,* enamel and glass on multiple copper welded shallow boxes

Karen Blockman, painter and enamelist, now lives and works in New York City. Kathleen Doyle is resident metalsmith at Penland School of Crafts, Penland, North Carolina.







We are in a position as nothing else is, to look into the skies and undertand their great spatiality and infinity. It's the same as looking into a microscope and seeing whole populations of infinitesimal worlds. Art and science naturally go together. Both are investigative endeavors aimed at trying to understand the universe.
Dorothy Sturm

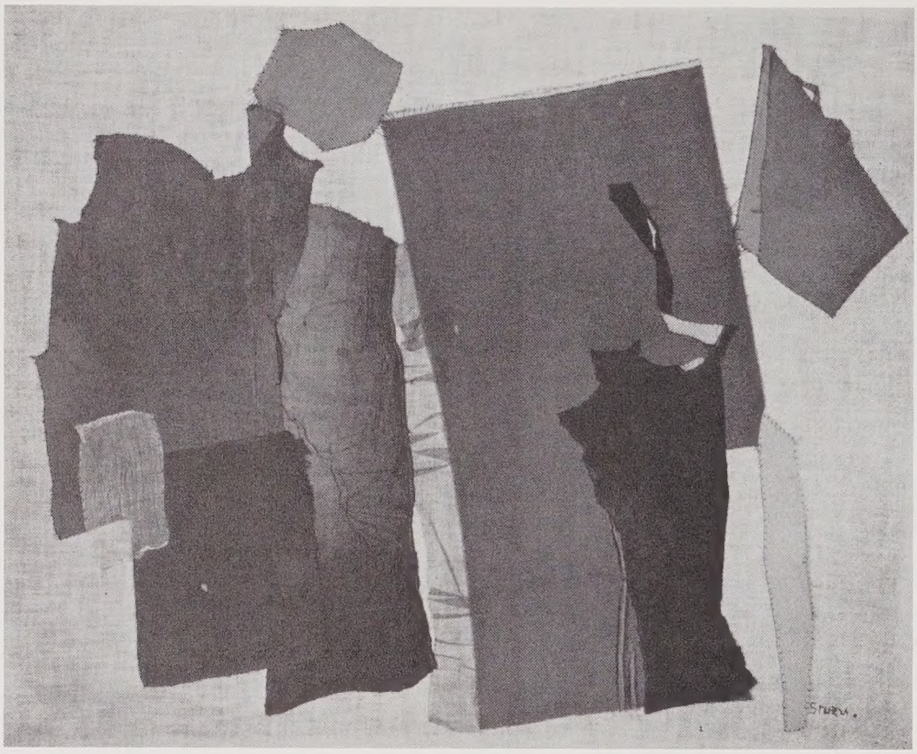
Entering the enameling studio, one is struck by its openness. Light fills the space. Shelves are lined with organic vessel forms and dense architectural silhouettes. Glass and pools of color illuminate the density of these shapes, creating a light of their own. Dominating the room is a woman, large in stature, with shocking white hair and a cigarette always at her lips. Her meticulous work table is arranged with fragments of glass, bottles and jars of powdered frit. Dorothy Sturm verbalizes her visual symbols in a stream of words, signs and universal wisdom that can be generated only from a person of genius.

Born and raised in Memphis, Tennessee, Sturm left home at the age of 19 with a small legacy and lit out for New York City. Intending to become a book designer, she took courses at Grand Central School of Art and the Art Students League. Interested in biology, she accompanied a friend to the laboratory of Dr. Florence Sabin, who was doing outstanding medical research on blood at the Rockefeller Institute. Through Dr. Sabin's specially developed microscope, Sturm had her first look at her own blood cells. Stimulated by the microcosmic world, she arranged to take courses at Columbia in biology and went on to become a prominent medical illustrator.

Sturm's sensitive, accurate style led to commissions for blood cell research, which included visual studies for sickle cell anemia and medications for the control of marlaria during World War II by the Rockefeller Foundation. Her work culminated in visual designs for the book *The Morphology of Human Blood Cells.*[1] A classic of its kind, it has been translated into eight languages and is used by medical students throughout the world. The link that connects the world of art and science throughout her work was established.

"If I can reach far into the past or beyond the moon or into the levels of bloodstream, into sort of hidden areas, then I capture them, or try to, and put them down in a form that is within a visible perspective. There is some elaborate, wonderful thing that is a common denominator between all forms, whether it be flowers or people, planets or mineral crystals. This is what the earth is made of."

Sturm's passion for understanding the molecular, cellular world, coupled with the enrichment she found in the art world in New York in the early 1930s, generated her symbols and imagery. Yet, discovering that she was victim to a genetic defect that was causing health problems, she returned to



Above *Fabric Collage 1,* fragments of fabric hand stitched onto linen, 4 x 6′, 1970. **Below** *Composition 10,* charcoal drawing on weave paper, 48 x 36″

Memphis for treatment. Despite her physical limitations she continued to work, achieving a greater understanding of a life-death perspective.

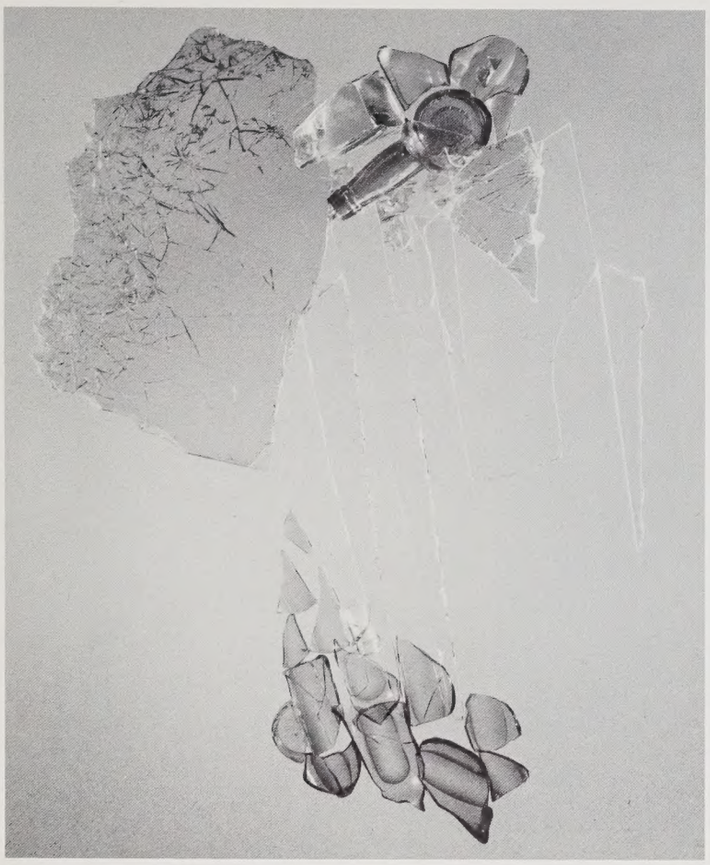
Her readings of Abstract Expressionist painters—such as Paul Klee, Vasily Kandinsky and Suzanne Langor—led her to an understanding of the abstract. "The child struggles, conscious of things and uses these things as its props. I think the young artist, throughout the history of art, is very conscious of things in the world as he knows them. They are his props. As time goes on it's natural that one approaches the abstractions. It is perfectly natural then, that Abstract Expressionism is not a probing backward or regressing, but a pushing forward into a higher understanding of relationships."

Her curiosity and driving energy have motivated experiments with many different media: enamel, glass, fabric and paint. No matter what the medium, she feels that there is some sort of universal master pattern of design. It is one realized in her intensive studies of the masters of the Renaissance. Just as the human body is aware of its organic rhythms, Sturm's awareness of the beats and rhythms that exist in the pictorial space of the masters follows the master pattern of design that we call universal.

Initially, she conveyed this through watercolors, drawings and enamels. Throughout this period she began to teach drawing part time at The Memphis Academy of Arts in Memphis, Tennessee. In 1950 her small watercolors were accepted into Weyhe Gallery in New York City, where they were exhibited for the following six years.

Discovering a small box of enamels in the attic of the old Academy, formerly a 19th-century residence and private art school, Sturm collaborated with students and began to teach herself the unorthodox and nontraditional techniques for which she is recognized today. Finding enamels a challenging and untamed medium, she began fusing different fragments of found glass, such as broken cups, fiberglass and chunks of hobnail glass onto a flat copper base. She allowed it to crack and craze, causing random, uncontrolled effects.

Not being restricted by formal training in enameling, she created a body of work that was free and dynamic. At this point the pieces were becoming larger, and the influence of Abstract Expressionism created a more sophisticated format within her work. New York gallery owner Betty Parsons, known for first showing the works of Jackson Pollack and Mark Rothko, accepted Sturm's first enamels with enthusiasm. This led to the publication of her works in *Vogue* and *Craft Horizons* magazines and to an invitation to be



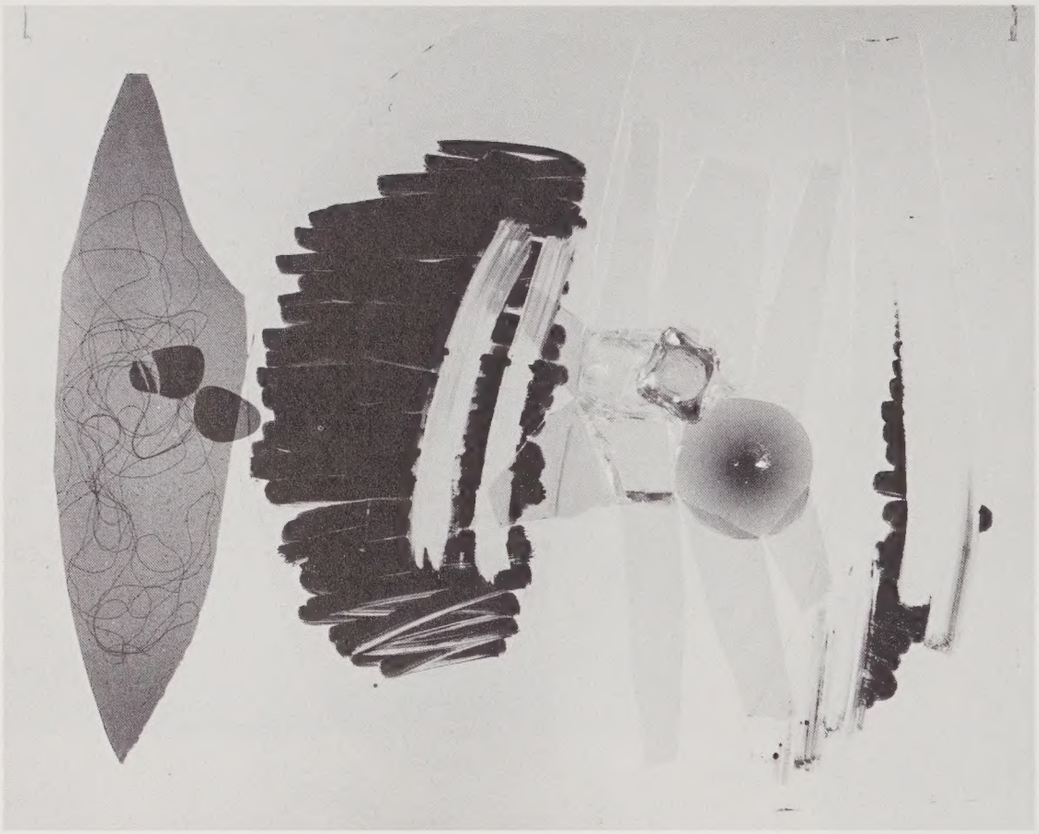
Above left *Glass Collage 1,* fragments of glass epoxied onto plate glass, 3 x 4′, 1958. **Right** *Glass Collage 2,* fragments of glass epoxied onto a windshield, 3 x 4′, 1958

included in the International Survey of Enamels Exhibition at the Museum of Contemporary Crafts in New York.[2] Attempts by Parsons to place her work in museums and other shows was limited due to the rigid distinctions made between arts and crafts. Any use of traditional craft media—such as enamels, glass or clay—eliminated such work from the art forum. Sturm was to keep bumping into these boundaries for the next 20 years.

Influenced by New York artists working in assemblage, Sturm became interested in the found object in collage. She searched for media that would lend themselves to the nostalgia of memory. "The found object bears the world; all of the violence, the tenderness, the uses." Because of their accessibility, she turned first to fabrics. Spawned by her grandmother's appliqués and sewing, her fascination with textiles extended to the different tactile densities of woven materials, their color and personalities. A drama was enacted by stitching together fragments of the discarded world, such as old stockings, shreds of an overworked dishrag or a sweater worn beyond repair. These found objects meshed with more pristine fragments. The scale of the first fabric collages was small, but over the years has grown; her most recent work spans over eight feet.

To subsidize her income in the mid 50s, she freelanced through the art department at Benswanger Glass Company. As a designer of stained glass windows, she became fascinated by the reflective and transparent qualities and the great beauty of cathedral and handblown glass. She continued this interest through designing major church windows for Laukhuff Stained Glass Studios. Thinking in terms of liberating the glass from all traditional support elements, she began experimenting with the lamination of glass on glass in collage. Sturm's involvement with the found object dovetailed with these new works. Fragments such as smashed automobile windshields, broken bottlenecks and the backs of old mirrors constituted the elements of a past world. The present world was evoked through new glass, whose shape she would alter by cutting. The excitement conveyed by light transmitted through layered glass with varying transparencies led her to eliminate the opaque metal ground; to suspend the pieces in space with clear plastic thread.

Plate glass was used as the ground, on which fine wires, coils of hair and ink painting were laminated, sandwiched between the plates. The next step was to find an adhesive strong enough to hold these coefficients of glass together. Insisting upon a continued use of found objects, as well, she finally



The ultimate is understanding the language of symbolism—the universal language in diagram form. This is the symbolism by which we learn to speak in all ways, whether we dance, sing, play a musical instrument, or paint. This is art. Art is the diagram or the symbol of a reality, not the reality itself but the symbol of it.

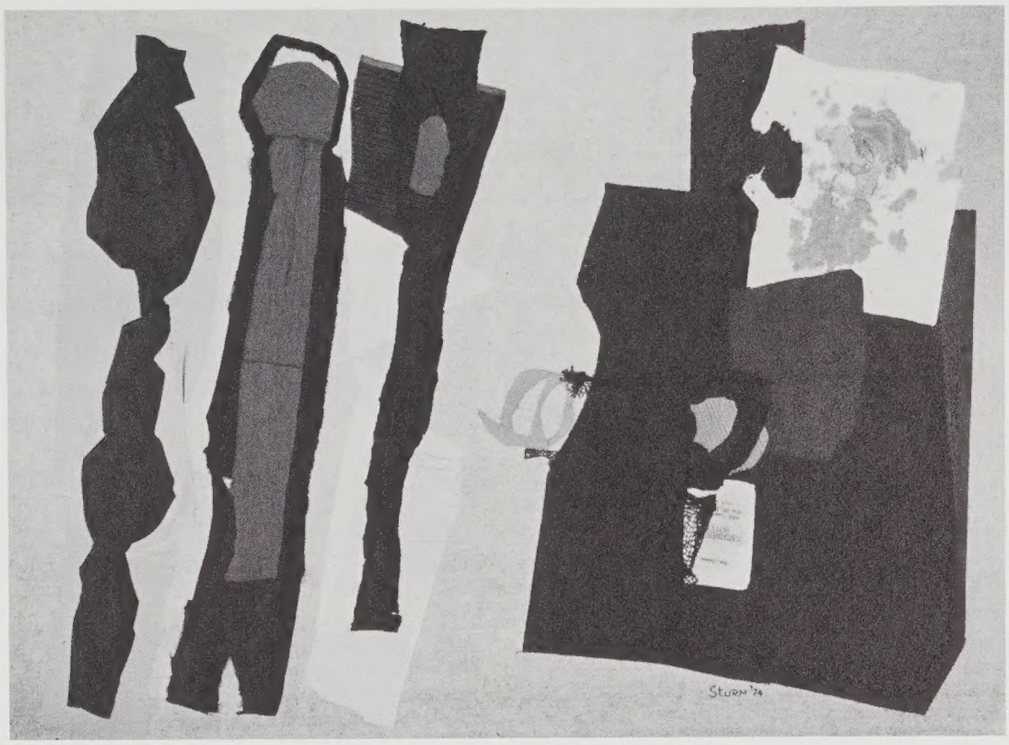
discovered a clear plastic epoxy bond that provided a successful bond despite its toxicity. The size of the work was not as large as the fabric collage because the glass could not support its own weight. The works ranged in size from three to four feet. Sometimes their size suggested early model car windows, which indeed some were. Color played an important role in the beginning, but as Sturm's awareness of light and shadow intensified, her use of colored glass diminished. The element of light in the room where the pieces were suspended played a major role.

The works were dynamic in medium and concept. This phase was to culminate with a major exhibition at Betty Parsons Gallery in the late 50s. Shipped by railway, the entire collection of glass-on-glass collages arrived in New York shattered. The destruction of these fragile works, as well as Sturm's allergic reactions to the epoxy bond, dramatically shifted her focus.

She devoted herself next to developing a means of fusing glass on metal with the use of enamels. As head of the Metals Department at the Memphis Academy of Arts, Sturm continued to build one of the finest metal-enameling programs in the country until her retirement in 1975. In 1972 she curated an invitational enamels exhibition at the Academy, which featured eight of the nation's top enamelists, including William Harper, Paul Hultberg and June Schwarcz. The show was selected for documentation by the American Crafts Council of New York, the second time in the council's history that it had requested documentation of a show outside of New York City.

In the first series of glass enamels, Sturm had concentrated on the esthetic to the exclusion of technique. Because she was forced to impose a discipline on herself, she began guiding her materials. "The spirit of the artist searches for the life in his materials, but he has to command these materials sufficiently to keep his own concepts and the imagery that symbolizes his dreams and fantasies. In realizing this, I had to pioneer my own vision so that others could see it."

Her initial problem of excessive warpage led her to use a thicker gauge copper with heavier enamel backing. Despite struggles with metal, she continued working with it, drawn to its vital, and defiant, properties. To Sturm there was more than technology involved. Silver became her prima donna, and copper a kind of "Atlas" or "Hercules." Copper represented the godfather—masculine, malleable and toush. Tormented, tortured and heated, it



Left *Glass Collage 3,* fragments of glass, wire and painting on glass, epoxied onto plate glass, 3 x 4′, 1959. **Right** *Fabric Collage 2,* fabric hand stitched onto linen, 4 x 8′, 1974. Photo: Jim Cappell

would nevertheless respond generously.

Her later works led her away from the flat copper panels toward the use of shallow, welded copper box forms. By thoroughly testing the melting points, she discovered the different properties of the batches of glass. By neither overlapping the fragments nor placing them too closely, she eliminated crazing on the surfaces. Textures made by engraved words and phrases and welded beaded patterns appeared beneath the fused transparent glass. The heavy firescale on the copper surrounding the focal areas of glass and enamel was scratched away, exposing copper as well as linear patterns of oxidation.

Dorothy Sturm's enamels are firmly controlled, and her formal composition is tight and precise. Her emotion in color is unrestrained. The values of color in each piece are significant, conveying motion or stillness. Associations of color create mood and sentiment. Her color has a way of playing with you. Or hurting, stabbing you. Red represents the "hot of the blood" and blue the "cold of the waters."

Sturm defines her art by the symbolism, the message, the spirit of the thing. This has been maintained in all of her works, be it fabric collage, watercolor, enamel or glass. Reflected in her later works, are such universal symbols as the sun, light, birth and death. The dialect of symbol has been taken from her own life. "The ultimate is understanding the language of symbolism, (the universal language in diagram form). This is the symbolism by which we learn to speak in all ways, whether we dance, sing, play a musical instrument, or paint. This is art. Art is the diagram or the symbol of a reality, not the reality itself but the symbol of it."

As copper represents a godfather to Sturm, she represents a godmother to us, constantly evoking both gentle strength and humble brilliance. Dorothy Sturm has been carving at a stone to find the shapes and symbols within. Through her art, her use of symbol integrating feeling and belief she has made significant not only her own life, but also many others. As a teacher, she guides us, constantly sharing her inner vision and absolute thoughts. "In art there is inevitably a seepage from your life. Finally, I believe that what happens in my work is there because it wanted to happen." This spiritual belief, that art is life is the constant through all of Sturm's work. It is one which enables the viewer to share the presence of this dynamic artist. ■

Notes

1. Dr. L. W. Diggs, Dorothy Sturm and Ann Bell, *The Morphology of Human Blood Cells,* Philadelphia and London: W. B. Saunders, 1956
2. *Vogue,* February, 1955; Belle Krasne, "Needle, Thread and Scraps of Cloth," *Craft Horizons,* Vol XV No. 1, Jan/Feb 1955, p. 17; International Enamels Exhibition, Museum of Contemporary Crafts, Sept. 18-Nov. 29, 1959

Metal Spinning

by James Seavey

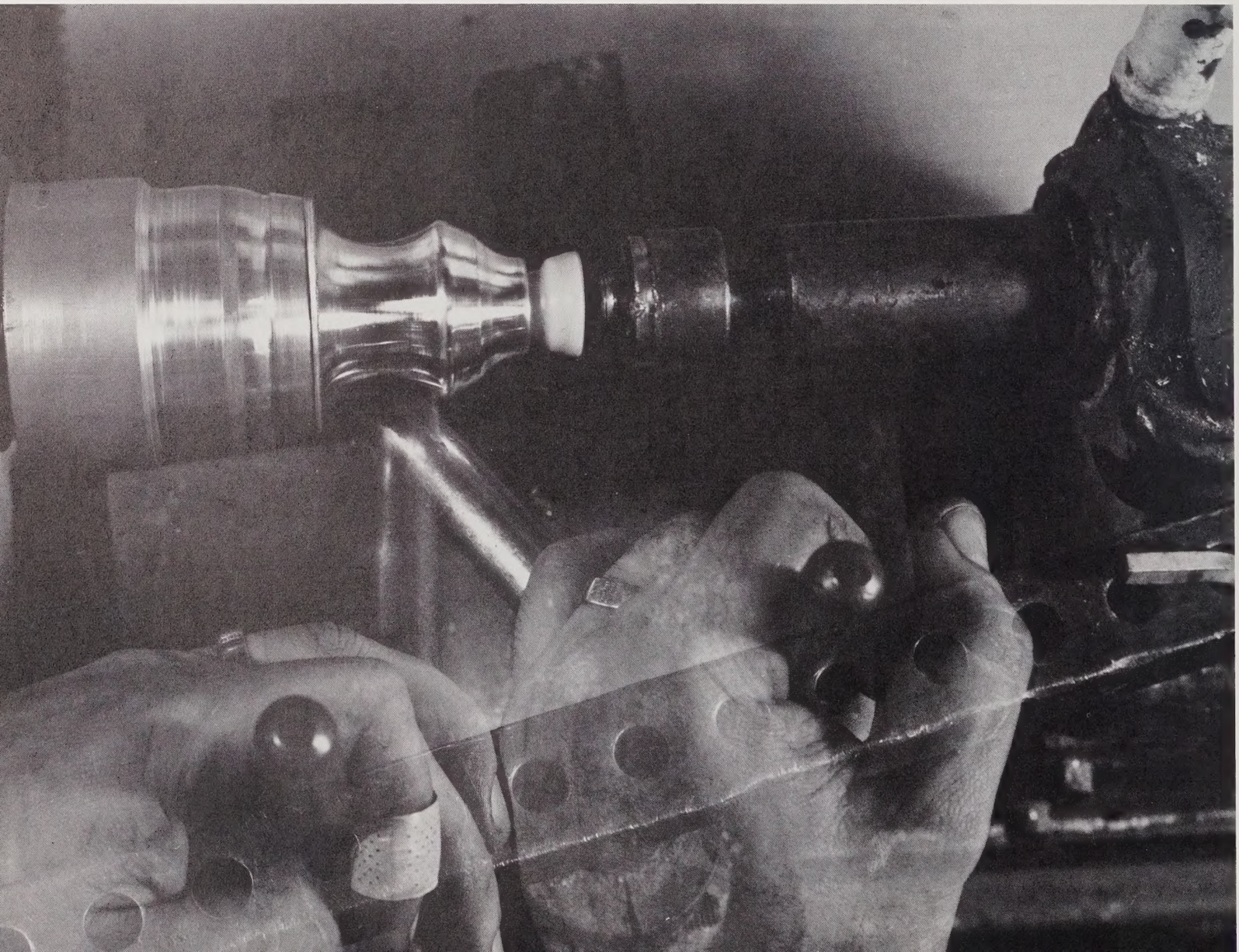
Second of a three-part series

James Seavey is a graduate of Rhode Island School of Design where he studied Metalsmithing with John Prip. He has worked as a designer-craftsman for Gorham Silver Co. and Old Newbury Crafters and as plant manager for Faithcraft International. Currently he makes and markets pewter holloware under the name Halibut Point Pewter in Gloucester, MA

The process of metal spinning involves the entire body. As with any hand-forming process, it is the skill (the accumulation of kinesthetic knowledge), not the strength, which determines results. What follows is a description of the techniques, noting variations and problem solving, which may serve as a practice guide to a metalsmith developing the skill of spinning. And once the skill has been mastered, one can begin to apply esthetic judgement to master the art of spinning.

For the first attempt, it is best to use a flat-bottomed form about half again as high as the diameter at the bottom. The disc diameter for such a form is about two-and-a-half times the same diameter—thus for a vessel or "shell," 2″ in diameter and 3″ high, a 5″ diameter disc is about right. It would be advisable to use a form (known as a chuck) and disc size standard to an experienced spinner so that one can use tested equipment to judge whether the form comes short or requires excessive trimming back.

After selecting a chuck (chucks will be covered more completely in Part Three), screw it into place over the threaded headstock spindle, being careful that the chuck seats properly without dirt or metal trimmings interfering. Be sure that the chuck runs true by jogging the motor on. If the chuck seems off-center, hold a felt-tip marking pen to the end of the chuck lightly as it



Below Forming a necked piece using tool on either side of the fulcrum pin. Photo: Jean Baer O'Gorman

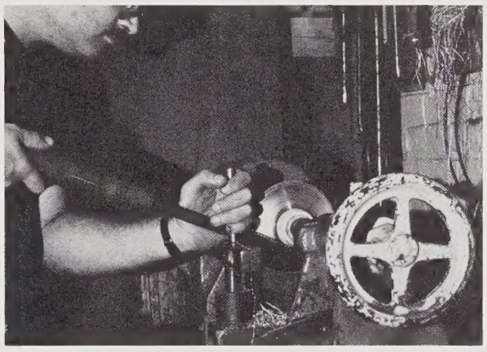
rotates so that when it stops, the high point has been marked. (This can also be done with a dial gauge.) Loosen the chuck and shim the high side with a sheet or two of paper, then check again. This running out of true can be attributed to any number of causes: a chuck has been used on a different lathe (with or without an adaptor); is slightly off the axis on a machine lathe; is warped or damaged by dropping; or requires reseating due to worn threads.

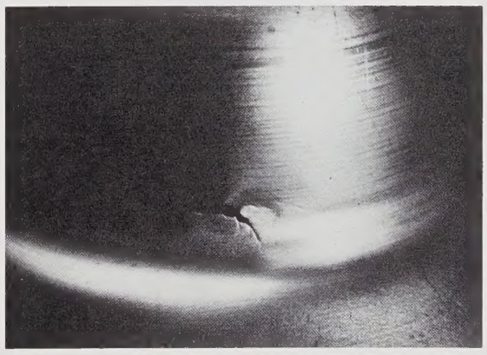
Select a follow block whose diameter matches the bottom of the chuck. Too large a diameter will not allow proper contact of the tool at the beginning of the first stroke; too small, and the bottom of the shell will tend to buckle back over the follow block. The block should center properly—that is, rotate on the same axis as the chuck when clamped into place by the action of the tail spindle of the lathe.

With lathes equipped with a cone-shaped live center, a small dimple centered on the tail side of the block keeps it running true. If the center has a cylindrical pin with a shoulder, a hole which fits snugly over the pin may be drilled in the follow block, which centers the block and keeps it in place when more than one of the same shell are being made. Blocks may be made by forming the center on a rough-cut, over-sized circle of plywood, nylon, teflon, hard rubber or similar material. It is then clamped to the chuck for which it is intended on the lathe, and the edge turned to the proper diameter. Often for forms with a flat bottom, the chuck and follow block are relieved (cut back) on the central surfaces out to within about ¼" of the edge to center the disc and to prevent marring the metal.

Set the lathe drive for the proper speed. Once again, experienced help will be of great aid. As a general rule, spinning is done between 800 and 1800 rpm; the thicker the diameter and/or disc, the slower the lathe will spin. Very thin discs are spun commercially at speeds up to 5000 rpm, and very large discs may require speeds below 100 rpm. Too high a speed can cause wrinkling and chattering and burn out lubricant. It also can cause thicker, shorter forms. Too slow a speed may harden, tear and push the shell out of shape. Yet with skill, almost any improper speed can be compensated for—or used to its own advantage.

The disc is then clamped into place between the chuck and follow block, as closely centered as possible. Experienced spinners do this while the lathe is running to save time. On certain operations it may take longer to stop the lathe, remove and load the work pieces, and restart than to do the spinning. To place the disc live, lightly hold the disc between the left thumb and index finger, centering by eye while the disc is riding against the chuck with the hand directly over the axis of rotation. Then the right hand activates the closing mechanism of the tail spindle—usually a snap of the wrist to spin the spindle wheel. The spindle moves rapidly to the chuck, clamping the disc with the follow block. The disc begins to rotate and slips from the grasp of the spinner whose hand is then pulled away. The disc must be held lightly enough so that when the follow block engages the disc, the hand is not pulled downwards; it must be centered as closely as possible to keep the eccentrically moving disc from nipping the hand.





From top to bottom:
1 Placing the disc live
2 Centering
3 Beginning the stroke
4 Failure due to excessive pressure at the beginning of a stroke
5 Failures due to excessive pressure in the mid-point of a stroke; this may occur at a point not backed by the chuck as well

Do not place the disc live until the chuck and follow block have been used together a few times after each setup to insure that proper clamping takes place. If the follow block has been damaged or altered, the chuck marred or running out slightly, or an incorrect distance between the center and the tail stock causes vibration, the disc may not stay centered. This may also result from overtightening. The danger of the disc catching off center is increased with the diameter of the disc—the risk of injury is due not to the frequency of off-centered discs, but to the greater arch of a larger disc's swing. As with all matters of safety, caution and good judgement inform the decision to place the disc live.

Centering Once the disc is clamped in place, it usually needs further centering. This is achieved by applying pressure to the edge of the disc while slightly loosening the follow block while the lathe is running. The centering tool, which may be a flat hardwood stick, a flat-faced spinning tool, or even the flattest part of a spoon or tongue spinning tool, is held in the left hand. The tool is on the tool rest against the fulcrum pin so that the disc's plane of rotation is at right angles to the face of the tool and the axis of the tool is in the same plane. The point of contact between the tool and the edge of the disc is underneath the disc, towards the front (in the 7 o'clock position).

The spinner stands to the right of the plane of rotation and controls the tail block pressure with the right hand. With the lathe running, the follow block is loosened slightly and the centering tool pushed up firmly against the disc until the tool ceases to vibrate, and the highlights on the edge of the disc appear stationary: The follow block is then tightened and the centering tool removed. In practice, it may be necessary to "play" (vary higher and lower) the follow pressure in order to center.

Should the disc fly out of control or start to drift off-center, pull the left hand out of the way and release the tail spindle pressure. This will cause the disc to jump from the lathe, which is dangerous, but less so than when it jumps without warning. Causing it to jump deliberately prevents damage caused when what may be a valuable disc hits the tool rest, lathe bed or safety shield. This quick release of the follow block pressure tends to decrease the velocity at which the disc jumps; in fact, it may often simply fall.

Lubricating Lubricant is applied to the centered disc at the follow block and swept outwards to the edge. The applicator may be a short bristled brush, a wadded cloth (sometimes held packed in a tubular handle), a tubular container (as with stick wax) or a handheld chunk of solid lubricant (such as soap or tallow). The container of lube is kept handy, often in a tub or tray bolted to the lathe. The choice of lubricant depends on many variables, including resistance to breakdown under pressure and/or heat, adhesion, clean-up ease, availability, effect on finish, visibility of the metal surface and even the weather. Generally, softer metals require softer lubricants; higher speeds require harder lubricants. As with running speed, each spinner develops preferences for each case. The accompanying chart is a rough guide.

Beginning to Spin The first stroke with the spinning tool is the most critical. While one wants to push the metal as far as possible on each stroke, especially with metals like brass which harden quickly, the first stroke permanently centers the disc, establishes the working base for subsequent strokes, smooths out warped or uneven discs and gives the spinner the feel of that particular metal—something extremely important on one-of-a-kind spins or at the beginning of a run.

The sweep—the radial movement of the tool—is determined by the vertical movement of the tool handle. The tool rest is adjusted, so that with shoulder, rib cage and hip lowered, knees flexed and feet flat on the floor, the tip of the tool is positioned to the right of the disc against the follow block at seven o'clock. The tool rests against the fulcrum pin on the rest; often the left hand grasps this junction lightly as a way of steadying the work and providing kinesthetic feedback. As the body stretches upwards—shoulder, rib cage and hip raised, knees straightened and feet on toes—the tip of the tool drops in a shallow arc from the follow block to the edge of the disc, again at 7 o'clock. The force of the stroke is in the lateral movement, toward the headstock, controlled by the flexing of the spine that moves the ribs to the right, the movement of the hips and the unequal flexing of the knees and lifting of the feet. The combination of all these movements at different rates and amounts of force exerts the will of the spinner on the metal.

The first stroke begins at a point close to the follow block and continues towards the headstock and the axis of rotation simultaneously. The disc is thus forced against the chuck at the point closest to the follow block in a ring, in the same manner the first row of hammer blows commences hand raising. The stroke is then swept out to the edge (or a point short of the edge on pieces with a very small area clamped by the follow block), with diminishing pressure so that by the end of the stroke no pressure is exerted. This is called feathering.

Lubrication Table

Metals	Lubricants
Titanium and hard tempers of many metals cannot be spun easily. Brass requires frequent annealing. Copper and aluminum are sticky, so a porous tool (wood) is recommended	Old books on spinning recommend tallow as a lube, although it is not readily available today. Sometimes lubricants can be mixed to achieve the desired properties. Wiping with a cloth or steel wool while the lathe is running can speed clean-up
platinum, niobium, gold, tantilum, stainless steel	beeswax, parafin, naphtha soap (dry), stick wax
mild steel, brass, bronze, zinc, hard aluminum alloys	hard spinning soap, stick wax, water pump grease
copper, aluminum, sterling silver	spinning soap, stick wax, grease, synthetic grease
pewter, lead	grease, petroleum jelly, shaving soap, soft spinning soap

Suppliers

Warren Chemical Company, 600 Pleasant St., Norwood, MA 02062 supplies a variety of spinning soaps. Industrial suppliers carry Johnson's lubricating wax

Stroke Pressure Diagram

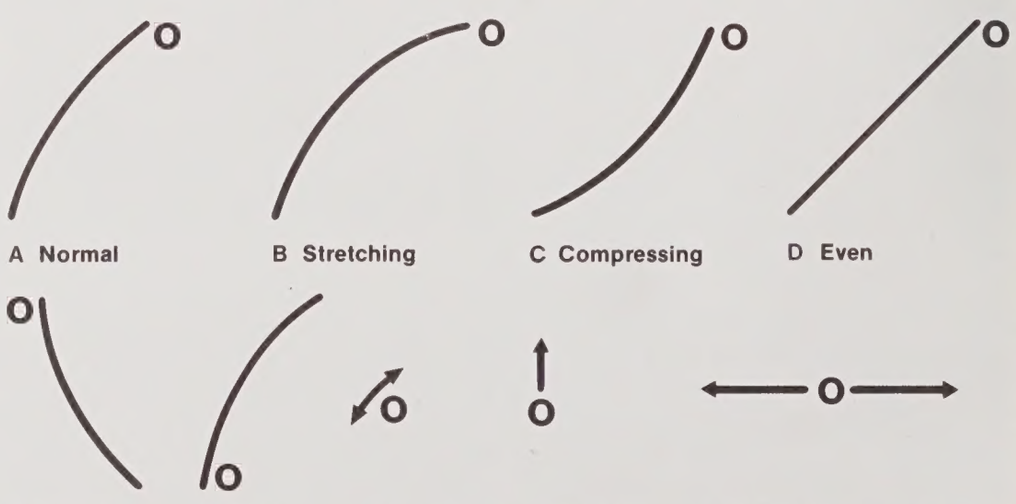
The thickness of the line represents the amount of pressure. The direction of the line represents the sweep, which may vary

Feathering **Double Feathering** **Even** **Reverse Feathering**

Stroke Lexicon Chart

Start of Stroke at **0**.
The top of the stroke on the chart represents the contact point between the chuck and the disc on A–F.

G and H can be at any point.
I is with the shell in contact with the chuck



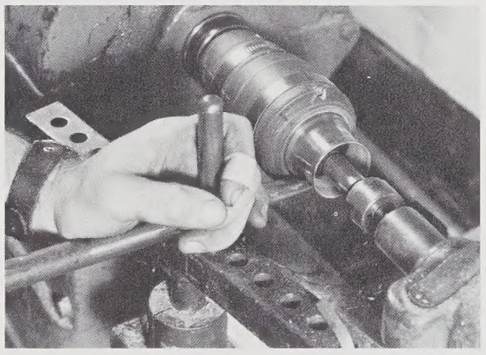
A Normal **B Stretching** **C Compressing** **D Even**

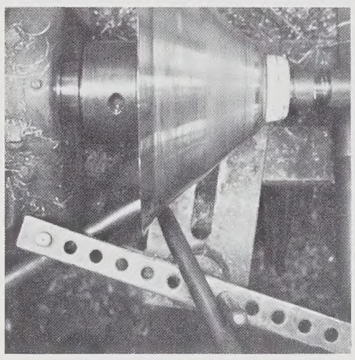
E Reverse **F Back** **G Oscillating** **H Pinching** **I Planishing** forth and back

If every stroke were a feathering stroke, the disc would form a cone whose sides would be increasingly concave to the point at which the metal would tear near the narrow end. To feather the beginning and end of the stroke would bring the tear point towards the middle. The first few strokes tend to be done with increasing even pressure. As the form becomes a more acute cone, the narrow end is pushed against the chuck at the beginning of the stroke in the same way that the first stroke creates a ridge or "bite" at the start. The properly controlled stroke pushes this ridge ahead of the tool; too little pressure or too fast a stroke in relation to the pressure and the bite will be lost, lessening the effectiveness of the stroke. Too much pressure, and the metal stretches excessively at the point of contact with the tool, and the edge folds backwards (towards the tail stock) or wrinkles severely. Short, corrective strokes, in a back-and-forth sweep feathered at both ends, can eliminate minor wrinkles, over stretching or fold-back. A long back stroke from edge to chuck will compress the metal so that a thicker section (gauge) may be maintained.

In spinning cylindrical forms, once the cone has become quite acute, and 30 to 50 percent of the disc has been laid down (in contact with the chuck), a flatter tool can be used with firm, even strokes to lay down the remainder quickly while increasing the section. Sharper radius tools tend to stretch the metal and leave minor ridges called spin lines; blunter tools tend to thicken the section, cause wrinkles, but leave no spin lines. The final stroke is often done with as flat a tool as possible, without edges that would score the concave surfaces of the shell, and with firm pressure applied against the chuck: this is the planishing stroke. Once confidence and skill are developed, it is possible to spin "on air"; that is, with part of the final form made without contact with a chuck, thus allowing both the forming of necked vessels without special tooling and creative control of the form. It is with spinning on air that the greatest artistic freedom is achieved—similar to that of a potter or wood turner.

On some occasions, with large discs or severe wrinkles, a backstick is used as a temporary chuck on the back side of the shell. This can be a hardwood stick or a flat spinning tool held in the left hand against a second fulcrum pin. It is pressed against the disc directly opposite the main spinning tool. This arrangement can be used to add more control to spinning on air.





From top to bottom:

1 Failure due to excessive pressure near the end of the stroke. The disc was mounted eccentrically to show that the pressure near the edge will cause wrinkles (this can be used decoratively) and not disturb the mid-stroke area
2 Spinning on air; only the bottom part with straight sides was done with the chuck. The edge was formed by cutting off random chords at the edge of the disc before spinning, and later hammering the edge
3 Another example of spinning on air, neck formed without backing. Photo: Jean Baer O'Gorman
4 The back stick used to support on air spinning

Trimming Trimming the edge may be required at any stage to even up a disc that has become distorted by uneven working or centering, by the grain of the metal—that is, the orientation of the metal crystals acquired during the rolling operations of manufacture of sheet metal. The final trim may be done just before the final flap is laid down; this is a useful technique when spinning a shell only partway on a chuck for a form shorter than one for which the chuck was designed.

The trimming tool most often used is a diamond tool—a square shaft of tool steel cut diagonally at one end, held at the other in a tube or pipe handle or collar on a wooden handle. The trim is achieved by holding the tool against the fulcrum pin (cupped by the left hand) and slowly bringing the cutting edge into contact with the edge of the disc. There are two positions for this. One is with the tool handle parallel to the floor and the flat of the tool on top, the diamond forming the relief to the cutting edge which makes a contact at right angles to the disc edge. The other is to turn the tool over so that the diamond faces up and holds the tool at an upwards angle on the tool rest so that the point of contact comes at the tangent of the tool's flat side and the disc's edge.

The second method is trickier, but affords greater control and safety from chips that fly from the spinner or a slip which may catch the tool, driving it backwards and down rather than kicking it up. On larger pieces and the harder metals, the lathe should be slowed to the slowest speed or jogged (turning the motor on and off in short bursts) while trimming. Sometimes commercial spinners will switch to a machine lathe for trimming. With the tool held in the proper position and moved slowly and steadily, there is little danger in trimming. Nevertheless safety guards, especially a face shield, should be worn as protection against flying chips.

Removing Finished Shell Although some special procedures may be required, removal of the finished shell can be done live or still by loosening the tail spindle and grasping the piece. On deep cylindrical forms where the metal has stayed in close contact with the chuck (no springback), it is usually necessary to break the vacuum caused by the plunger action of the chuck within the shell by grasping the piece as it spins. An alternative to this procedure would be to drill a small hole in the center of the disc before starting. If a shell resists loosening when being grasped live, even with leather gloves, the piece can be loosened by a final planishing stroke with the follow block removed. When making the chuck, care must be taken not to allow a backward taper which will permanently lock the shell on the chuck. Sometimes with a wood chuck the shell has been worked on so tightly that even live removal or extra planishing does not remove it. The even heating of the shell with a torch should expand the metal enough to allow its removal: at worst, the chuck may be slightly charred. Sometimes a burr will prevent the removal of the shell. A small, hooked cutting tool can then be used to remove the burr with little or no damage to the chuck.

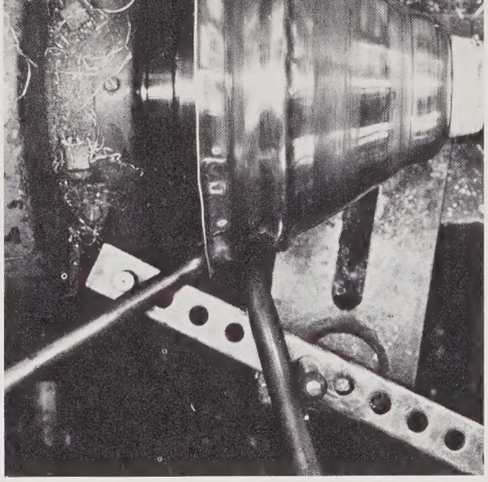
Fine Spinning Several specialized tools are appropriate for "fine spinning"—the work on a small scale that can add design interest or strength to a finished piece. These are generally made of smaller diameter round or square steel rod and have smaller handles than the forming tools. Small tools with the same shape as the larger ones can bring up details such as ogees and grooves.

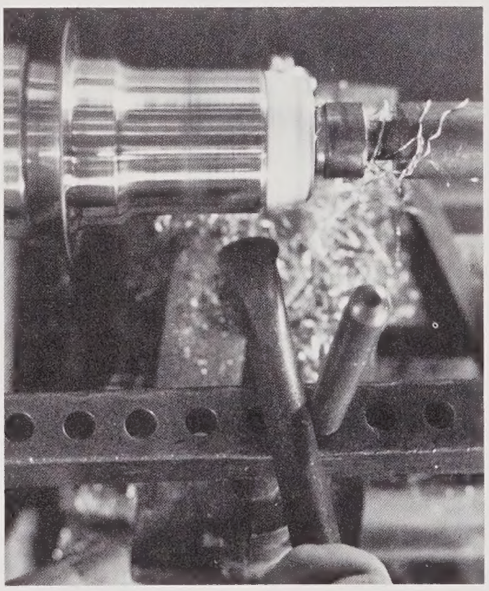
One variation is the "knife," a flat tool with one edge tapered to make a varying radius so that different radii grooves can be made depending on the point of contact, either in bands, or by moving the tool laterally, in spirals. Screw threads may be formed at low speed over a threaded chuck: The lathe must be stopped and the shell unscrewed for removal. A flat piece of bar stock with a slot cut in one end to accept the thickness of the disc to a certain depth is used to bend over flaps near the edge to form a pan shape on air or in preparation for forming a bead—a rolled edge. The edges of the slot must be rounded and the inside surfaces smooth. The shaft may be bent to allow the proper angle of attack. Tool steel serrated cutters are used to score parallel bands around the finished piece.

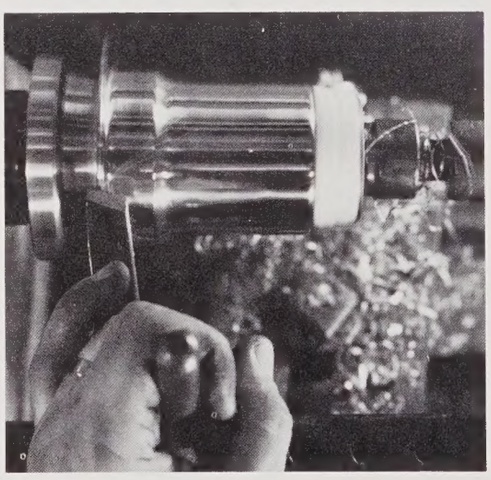
A miniature version of the large wheel tools used to reduce friction on heavy work is the knurling wheel. Much the same as a machinist's knurling tool but with a single wheel and long handle, the decorative design of the wheel is embossed into the rotating shell. A concave wheel tool with a smooth surface is sometimes used to form a bead.

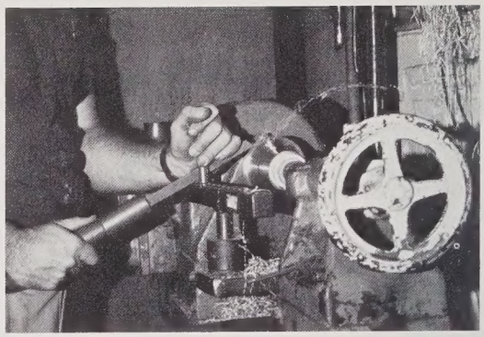
The finest tools of all are the abrasives: sandpaper or cloth, steel wool or buffing compound applied with a cloth. Some spinners do their final finish on the lathe, using holding chucks to finish the inside surfaces. A scrubbing motion made while applying pressure will help to eliminate parallel bands left by the various abrasives.

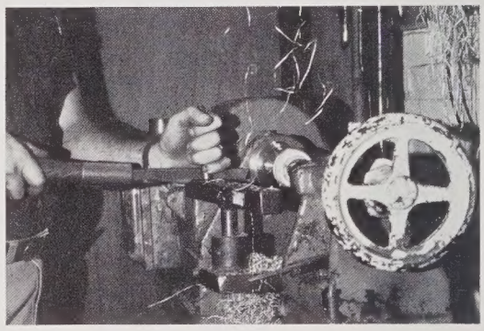
By spinning on air or by using successive chucks, a spinner can expand the vocabulary of forms available from a given set of chucks. Often it is possible to make one chuck perform many functions by varying the follow blocks or adding rings or other elements. The variations of chucks and followers will be covered in the next section, with particular emphasis on getting the most out of limited tooling. ■

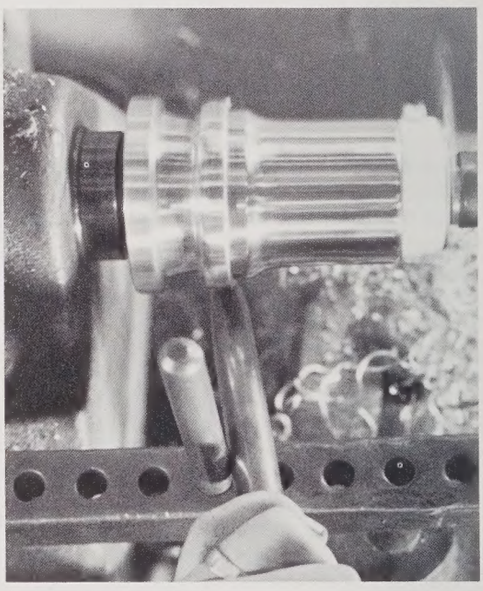












From top to bottom:
1 The back stick used to aid in the removal of wrinkles
2 The planishing tool is applied in a smooth firm stroke. Photo: Jean Baer O'Gorman
3 Trimming tool in use

1 Tangental position for trimming
2 Parallel position for trimming
3 Rolling back a bead. Photo: Jean Baer O'Gorman

Martha Glowacki Fields of Reference

by Janet Koplos

Martha Glowacki's works are sculptural abstractions on the theme of landscape. They demonstrate her interest in the imposition of order on the randomness of nature and her discovery of pattern, both natural and man-made, in the landscape. The pattern may come from the systematizing of maps or from the geometric traces of human activities and structures. These may be archaeological remnants of ancient settlements, still outlined through chemical deposits left in the soil by the stone of archaic buildings, or they may be more modern remnants, such as wobbling fences and decrepit farm equipment. The pattern in landscape is made apparent through the geometry of map notations. Maps are landscapes in code, landscapes for fact and for imagination. Patterns may be long-term, as in topography, or they may be transitory, as in the linear pattern of a plowed field. These are all ways that living beings relate to the landscape, putting marks on the earth, taking from the earth, and ultimately returning again to oneness with the earth.

Time is a pregnant participant in Glowacki's works. They seem to reflect a peaceful submission to natural processes. In each case, the images reflect an act—whether the construction of a fish drying rack, the assembly of a fencerow or the collection of twigs and fibers made by birds or by wind. But in every image, the act is long past. The works suggest an easy serenity; those acts are mere specks in time, but suggest their own eternity in their repetition. These are small acts in the millenia that lose their individuality in the seamlessness of time, a continuum Glowacki evokes in coupling the antiquity of symbols drawn in caves with the modernity of photoetching. Her ease in making these connections may come from personal experience. She worked once at a historical society, cataloging agricultural implements, 19th-century household goods and clothing. Some of her specific images may derive from that.

Glowacki uses mostly nonprecious materials, particularly copper and bronze. The colors suit her landscape theme, and these materials keep the intellectual value of her theme from becoming precious. And these *are* intellectual works. They are not literal. Even her photographic imagery is not specific. Instead, she uses the textural impressions drawn from photographs of grasses and fields to convey the abstraction of an impression. Map markings are another abstraction, with nature seen through the filter of humanity's need for order and information. The map is nature intellectualized. Another layer of reality is provided by the three-dimensional elements, most often fences and stands of tall grasses, but also hogans or arbors or other forms.

All these are presented on shifting fields (both meanings intended) of reference. In most cases, some horizontal element represents the earth itself, the rolling contours of southern Wisconsin. The land is open, empty, windswept, but like a winter field or burned-over ground it is not barren, but waiting. The earth surface is not massive, heavy or stable.

Right *Four Corners Wind Dome,* sculpture, bronze, brass and copper, 8 x 8 x 16", 1982

Janet Koplos is crafts editor for the *New Art Examiner,* Chicago, Washington, D.C.

Above *Shard Series: Heron Arbor,* sculpture, photoetched bronze, copper, brass and paint, 9 x 5 x 15″, 1982

Glowacki avoids that kind of firmness by propping these landscapes up on stilts, by cutting edges askew, by splitting the earth image and bending it apart; in every way possible, she keeps this earth base up off the real base of the pedestal. This gives it a visual lightness that contributes to her meaning. The earth is not then a static anchor, but a sensitive skin upon which events take place. The earth surface is like a magic carpet, an elusive image, shifting through time and space.

These images are not just elusive, but surprisingly illusive. Unlike more traditional large-scale or figural sculpture, they do not deal with volume or mass. They remain sculptural because they define space in the same sense that contemporary large-scale sculpture does, yet monumental sculpture—say, Mark di Suvero's, or Loren Madsen's, or Linda Howard's—retains a tangibility that Glowacki is somehow able to escape. I suspect the key is her metalsmith's concern with surface. The craft tradition of attention to form and surface allows her to deal with both object and image (illusion). She has a dual means of expression.

Thus that magic carpet surface of earth in *Split Field on Stilts* or *Three Bound Fields,* for example, not only suggests a physical dimension of the rolling earth, depicted three-dimensionally and tangibly, but Glowacki can add to that the sense that this little fragment of surface extends into the whole surface of the earth, binding our globe together. There is a hint of the kind of space achieved in Chinese painting: one has the impression that space is endless, and that Glowacki has chosen to depict this little segment because it is all that's necessary to suggest the larger whole. No picture frame is necessary, as in Western painting, to put an ordered framework on this conception. It could be a slice of life or a slice of dream.

Glowacki herself attributes it to a more mundane cause: catching glimpses of the scenery as she drives past, a natural fragmentation of image resulting from the speed of contemporary transportation. It exists in image to draw us into the world that it defines for itself, half-hidden, half-known, half-imagined, that has little to do with the literal concreteness of traditional large-scale sculpture. The scale contributes to the achievement by requiring the imaginative leap on the part of the viewer. It is neither real scale nor daunting, aggressive monumental scale. It is a vision of shifting space that can be entered and explored only by the imagination. Surely this is the finest kind of experience that art can achieve. It has no limits.

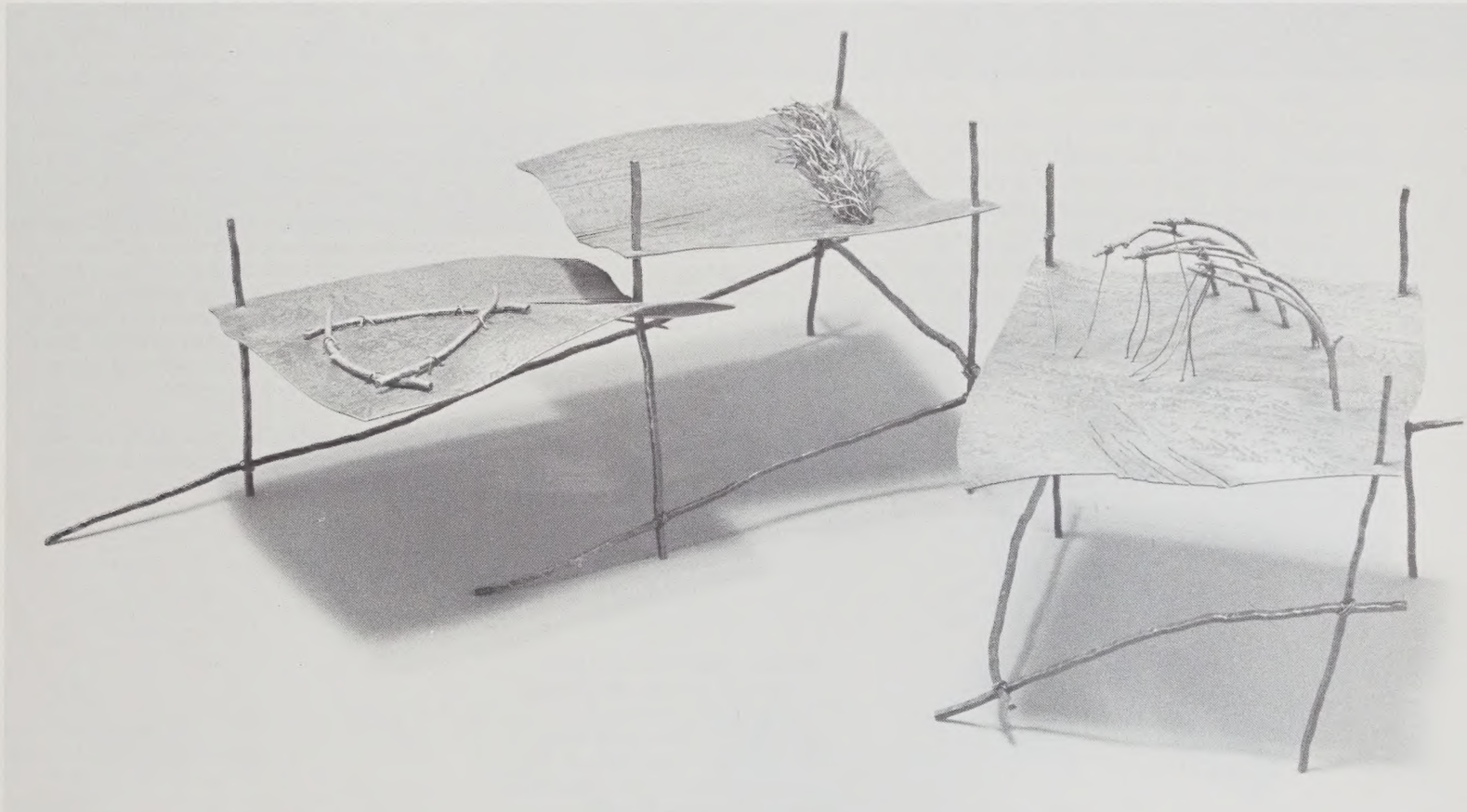
Not all the pieces in the exhibit achieve this negation of boundaries, but it's surprising how many do. Particularly interesting is that Glowacki achieves this end in two pins, functional works. I suppose there's some question as to whether that's a good thing in jewelry. Glowacki has in the past made quite a bit of jewelry, some in brass, copper and bronze, some in handmade paper marked with stitches and encased in plexiglass. They were quite abstract, she says, like small-scale paintings. She was chagrined to find that they wouldn't sell for that reason—if they appealed as paintings the public wanted them on walls, not on the body. Perhaps the pins in this exhibit, *Field Sight (Blue Grass)* and *Field Sight (Green Grass),* would suffer the same fate and would never be worn.

But in jewelry scale, 3 x 3½ x 1 inches, they achieve that same shifting of space, time and reality. The etched surface of illusive grass is augmented by a swath of three-dimensional grass, the wiry, harsh, brittle grass of winter. Remnants of fence cross the field, a manmade feature alike in linearity, projection and tactility to the natural features. Glowacki has constructed the parts with a slight flattening of three-dimensionality and with a swelling two-dimensionality, so the images don't seem to settle into one plane of space, but rather to bend and shift as if one were looking through shattered glass. The shifting averts any danger of this rural scene collapsing into cute miniaturization. One has the sense of two realities meeting, but not exactly, like those children's pins in which a change in the viewer's position makes the image move. These pins hover right on the edge of such a shift, with simultaneous realities.

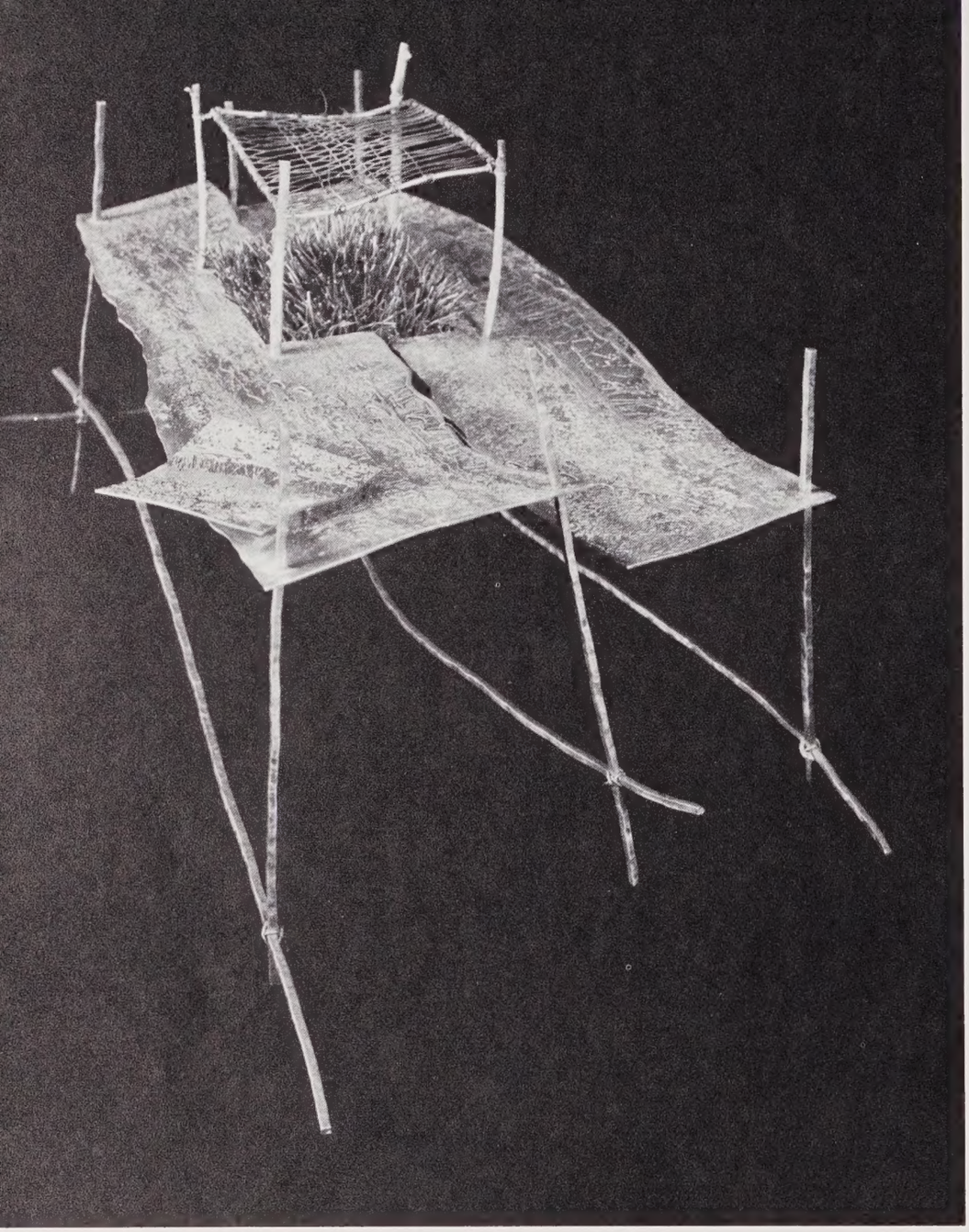
Four Corners Wind Dome and *Big Wind Dome* are heavy wire structures that do not rely upon the earth surface plane for their visual base. Both suggest Indian drying racks or hogans or corncribs on which tatters, represented by bits of copper sheets, have appended themselves—perhaps caught by the structure in the wind, or torn from the structure by the wind. Some of these bits are found metal; others are put through a rolling mill. Their patterns are bent, wrapped, frozen now but recalling fluid flapping in the wind. The dome itself is a spiral, mimicking the natural form of a dust devil. The spareness of the wire outline keeps these works in the realm of suggestivensss and imagination. Yet they do not shift through space. They are objects—fixed, settled, acted upon.

A similar structure that exceeds that limitation is *Shard Series: Heron Arbor.* While this structure may be decayed, it may also be a chance occurrence of limbs in a thicket, a protective configuration in any case. An undulating sheet of copper floats midway through the arbor, etched in river blue. Imprinted in the sand or mud is the track of the heron. This has personal meaning for Glowacki. Her parents are devoted bird watchers, and she did discover and photograph the mark of the heron along the Wisconsin River. Yet one does not need to know this. The track seems to glisten in the grainy blue of the shifting surface like a talisman of some significant presence, and the surface is once again the viewer's entry into an imaginable whole reality, the world of the riverbank, far from the complexity and rush of civilization.

Shard Series: Falling Bundles is a less specific representation. It, too, consists of a framework and a landscape layer, this one leaning downward from the center, beyond the confines of the structure. The framework is again twiglike, seemingly accidental. Some twigs lie on the surface of the protruding copper sheet, which is embellished with a photoetching of twig marks in a shallow, sandy stream. One sees the surface of the sheet as the surface of the water, and the ghost image of submerged twigs as below, beyond. This concept is comparable to



Below *Three Bound Fields,* sculpture, photoetched copper, bronze and paint, 21 x 13 x 5", 1982

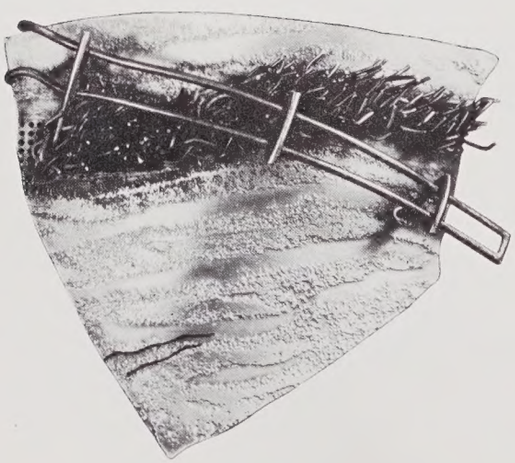


Monet's waterlillies, where the canvas surface is equated with the water's surface. In this case, the abstraction of reality through photoetching, which alters the nature of the image, gives an even broader spatial concept. The surface seems to vanish, and one glimpses a time sequence of the erect limbs of the framework breaking and falling and disappearing in vast space, in an infinite beyond.

Shard Series: Ring Marks is a wall piece with which Glowacki is not entirely at ease. It may not be completely resolved, but it has interest even in its present state. The framework is roughly snowshoe or shield shape, and two copper sheets, tied on with wire, span it near the maximum width. One rod of the framework crosses over the front of the sheets. The piece is more relief than sculpture. Focus is on the enameled surfaces, which are mottled and scarred like an architectural site seen in an aerial photo, a theme Glowacki has favored for several years. But that's not all. There's a reminder of cave painting in the several spirals which mark it. Among the most ancient of man's markings, these are also natural forms. And they are celestial forms, hinting of the starry infinity. Furthermore, these marks suggest modernist painting inspired by ancient art, from the works of Picasso and Miro through Abstract Expressionism. Because one image does not predominate, the piece is perhaps unfocused. But it's still provocative.

She maintains a studio and teaches part time at several local schools. Her early graduate work was functional, and she returns to pins occasionally, but the drift has been toward sculpture and larger scale work. She has moved from jewelry scale to as much as 21 inches in multipart works. Like Richard Helzer, she is interested in maps and markings, and a few pieces even refer to ancient English structures. There is also an affinity between her work and the mysterious, emotionally introspective objects of Carol Kumata, a fellow MFA from Wisconsin and, coincidentally, a friend. Kumata's work tends toward poetry and mystical transformations; Glowacki's landscapes, by contrast, are allied more appropriately with prose, with the simple directness of the midwestern fields and the steadiness of mid-American common sense. The transformations in her work find their magic in tiny increments, in the endless seconds of passing decades and the numberless rolling hills and blades of grass of the Midwest. Glowacki's value is akin to that of the craft tradition: care, control, attention to subtlety, coupled with a meaning that transcends the particular of her personal perceptions and achieves a universal.

Martha Glowacki's work was shown in a solo exhibit at the Kit Basquin Gallery in Milwaukee in December, 1982



Above *Split Field on Stilts,* sculpture, photoetched bronze, copper, brass and paint, 14 x 9 x 7″, 1982. **Left** *Field Sight (Blue Grass),* brooch, photoetched bronze, brass, copper and paint, 3 x 3½ x 1″, 1982

A Metalsmith's Guide to **Los Angeles**

by Alvin Pine

This guide can be useful to metalsmiths who are new to the Los Angeles area or to people who have been living here and developed an interest in the metalsmithing world. The information is based on the experience I have accumulated in living here for about 20 years and the research I did especially for this guide.

I sometimes jokingly tell friends that if you're patient enough you can find and buy everything you need for your craft and living needs at a swap meet (flea market) or an auction. The Sunday edition of *The Los Angeles Times,* Metro section, Part II, has several pages of ads for upcoming auctions in the greater Los Angeles area. If you have never been to an auction, you should go just to see how it works. There is usually a two- or three-day pre-auction period when you can inspect the items to be auctioned. Take a tool catalog with current prices and a notepad so you can record the lot numbers of items which interest you and jot down other important information about these objects.

On the day of the auction it is wise to show up a little early and examine again those items you are interested in. They may have been moved, withdrawn or deliberately damaged to lessen the competition. Dress comfortably, bring a lunch and a good book to read during the long stretches between lot numbers you plan to bid on. At fine antique auctions, the items will be shown on a stage, one at a time, and you will be sitting down. A pair of binoculars will be very useful to you at these events. Talk to people at the auction and ask questions.

1

Swap Meets Here are a few suggestions for swap meet fans: Call ahead to check location and directions if you're going for the first time. Double-checking with a map will also help get you there without wasting time and mileage. Go early. Some of the best bargains can be had when people first unload their cars and trucks. Wear comfortable clothing, shoes, hat. I usually wear overalls and carry a large rucksack. Carry as little as possible; make trips back to your car and unload your pack periodically. Leave large bulky things with the people you bought them from until you are ready to go home or pay for them and arrange to pick these items up at their homes if they live close by. You might also try using a little red wagon or shopping cart. Try your hand at bargaining to see if they would "go less." For example, an item priced at $35 you might say "Would you take $25?" You might get a "yes"; you might get "I'll go $30." You can accept or walk away with a "thank you." A flea market is like an auction.

2

Alvin Pine is a professor of metalsmithing and jewelry at California State University, Long Beach

You're really bidding on things; some you get and some you don't. After you get to know swap meets you will learn how fast certain items move (like tools for your craft). If you have only a limited amount of money set aside to spend that day, you can go around making note of all the outstanding buys in the whole swap meet, then go back to those things and try to buy them at a good price. I've only lost a few opportunities to buy this way. But don't be greedy. If you see a French-made 30-hole square draw plate for $6.00, buy it then and don't even bother to bargain. You've already got a treasure. You might also try to get people to take your personal check on expensive items. Carry good I.D., smile and be personable.

One-Day Itineraries When I have the time I try to plan my trips to places in the Los Angeles metropolitan area so I can take in more than one place of interest. For example: If I'm going to the Los Angeles County Art Museum on Wilshire Boulevard, I'll also drop into the Craft and Folk Art Museum down the street and visit a few galleries on the same street. Then I'll do some shopping for ethnic Jewish foods on Fairfax Avenue, with an hour left to browse through the art books at Hennessy and Ingalls on Pico Boulevard. This might be followed by supper at the Japanese restaurant next door and a movie in nearby Westwood (UCLA) before heading home to Long Beach.

A typical Sunday trip to Riverside, 50 miles east of where I live in Seal Beach, would be: Leave at 8:00 AM to make the swap meet at the Van Buren Drive-In (Van Buren exit on the 91 freeway in Riverside), then go on to downtown Riverside to visit John Birbeck of Pioneer Tools, 3660B Market Street at Sixth. He has the largest collection in the West of old and antique tools. Most are for sale, and he is open Sundays. Walk over to the Mission Inn (Hotel) a block away and walk through the gardens, discovering their wonderful collection of 900 bells and the iron forgings that adorn the outside architectual detailing. Have brunch in their dining room (one fixed price, all you can eat, until 2:00 PM) and then take the organized tour of the hotel or walk over to the University of California, Riverside campus, to see what is on exhibit in the art galleries.

A trip to Pasadena (on the first Sunday of each month) allows me to do the Pasadena City College swap meet, then go over to the Gamble House to see a beautiful example of a Greene and Greene redwood house done in early turn of the century California bungalow style (noon to 3 PM). Finally I'd head for the Pacific Asia Museum to see its current exhibition and browse in the consigned Oriental antiques gift shop.

Los Angeles and its surrounding area are a vast treasure house of stimulating things to see and do. These are just a few of my favorite places. From the following list I hope you will discover many more of your own.

Museums

California Museum of Science and Industry, 700 State Drive, Exposition Park, Los Angeles (213) 749-0101. Traveling exhibits of metalwork

Charles Bowers Museum, 2002 North Main Street, Santa Ana (714) 547-8304. Periodic exhibitions; Indian silver in permanent collection

The Craft and Folk Art Museum 5814 Wilshire Boulevard, Los Angeles (213) 937-5544. Shows contemporary jewelry and metalwork

Edward-Dean Museum of Decorative Arts, Riverside County Art and Culture Center, 9410 Oak Glen Road, Cherry Valley (714) 845-2626. Some contemporary jewelry

The Francis E. Fowler, Jr., Museum, 9215 Wilshire Boulevard, Beverly Hills (213) 278-8010 Historical silver

Hebrew Union College Skirball Museum, 3077 University Avenue, Los Angeles (213) 749-8611 or 749-3424 Liturgical metalwork

La Jolla Museum of Contemporary Art, 700 Prospect Street, La Jolla (714) 454-3541 Contemporary metalwork

Los Angeles County Museum of Art, 5905 Wilshire Boulevard, Los Angeles (213) 937-2590 Contemporary metalwork

Mingei International Museum of World Folk Art, University Towne Center, 4405 La Jolla Village Drive, La Jolla (714) 453-5300. International folk and contemporary metalwork

Pacific Asia Museum, 46 North Los Robles Avenue, Pasadena (213) 449-ASIA. Oriental historical metalwork and jewelry

Southwest Museum, 234 Museum Drive, Highland Park (213) 221-2163. American Indian metalwork and jewelry

Galleries

Arco Center for Visual Art Atlantic Richfield Plaza, 505 South Flower Street, Los Angeles (213) 488-0038

David Stuart Galleries, 748½ La Cienega Boulevard, Los Angeles (213) 652-7422

Frederick S. Wright Art Gallery Dickson Art Center, UCLA, Los Angeles (213) 825-9345 or 825-1461

Harry A. Franklin Gallery, 9601 Wilshire Boulevard, Suite 728, Beverly Hills (213) 271-9171

Image of the Inuit Gallery Contempo Westwood Center, 10886 Le Conte Avenue, Los Angeles (213) 473-4152

Larry Whiteley Galleries of American Folk Art, 303 North Sweetzer Avenue, Los Angeles (213) 658-8820

The Mandell Gallery, 472 North Robertson Boulevard, Los Angeles (213) 652-2396

Many Horses Gallery, 740 North La Cienega, Los Angeles (213) 659-0737

Museum of Cultural History Haines Hall, Room 2, UCLA (Central quad, near Royce Hall), Los Angeles (213) 825-4659 or 825-4361. Ethnic and folk metalwork

Stendahl Art Gallery, 7055-65 Hillside Avenue, Hollywood (213) 876-7740

Watts Towers Arts Center and Towers of Simon Rodia, 1727 East 107th Street, Los Angeles (213) 569-8181

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Jewelry Galleries

Del Mano Gallery, 11981 San Vincente Boulevard, West Los Angeles (213) 476-8508

Free Hand, 8413 West 3rd Street, Los Angeles

Elizabeth Fortner Gallery, 1114 State Street, Santa Barbara (805) 966-2613

Gallery 8, 7464 Girard Avenue, La Jolla (714) 452-3732

The Raku, 224 Yale Avenue, Claremont (714) 626-8876

The Raku, 924 State Street, Santa Barbara (805) 966-9950

Running Ridge Gallery, 310 E. Ojai Avenue, Ojai

A Singular Place, 2718A Main Street, Santa Monica (213) 399-1018

Houses

The Gamble House, 4 Westmoreland Place, Pasadena (213) 793-3334 or 681-6427. A California bungalow-style home with sculptured woodwork, hand-shaped beams and projecting rafters; designed by architects Greene and Greene

Hollyhock House, Barnsdale Park, 4809 Hollywood Boulevard, Los Angeles (213) 662-7272. Designed by Frank Lloyd Wright

Mission Inn, 3649 7th Street, Riverside. A historic, mission-style hotel with Spanish antiques, 900 bells and crosses. St. Francis chapel contains a 200-year-old altar from Guanajuato, Mexico, and Tiffany windows

Schools

California State College, San Bernardino, 5550 State College Parkway, San Bernardino, CA 92407 (714) 887-7201

California State University, Fullerton, Department of Art, 800 North State College Boulevard, Fullerton, CA 92634 (714) 773-3471 or 773-3172
Directions: From the Orange Freeway (57), exit at Nutwood and drive west to State College Blvd., turn right onto Dorothy Lane and then left into a coin-operated lot. Instructors: Ray Hein; Al Ching

California State University, Long Beach, Art Department, 1250 Bellflower Boulevard, Long Beach, CA 90840 (213) 498-4376 or 498-4377
Directions: From the San Diego Freeway, take the Bellflower exit and drive south. The Art Department is near Seventh and Bellflower. Instructors: Dieter Muller-Stach; Alvin Pine

California State University, Los Angeles, Art Department, Fine Arts Building, 5154 State University Drive, Los Angeles, CA 90032 (213) 224-6111 or 224-3521
Directions: San Bernardino Freeway to the Eastern Avenue exit; turn left directly into the campus. Instructor: Carol R. Radakovich

California State University, Northridge, Fine Arts Building, 18111 Nordhoff, Northridge, CA 91330 (213) 885-1200
Instructor: Fred Lauritzen

Cerritos College, 1110 E. Alondra Boulevard, Norwalk, CA 90650 (213) 860-2451
Instructor: Joe Girtner

El Camino College, 16007 S. Crenshaw, Torrance, CA 90506 (213) 532-3670

Gemological Institute of America, 1660 Stewart Street, Santa Monica, CA 90404

Jewelry Tech Institute, Inc., 7271 Garden Grove Boulevard, Suite F, Garden Grove, CA 92641 (714) 897-0935 or 897-0930
Instructor: Marilyn Ravanal

Long Beach City College, 4901 East Carson Street, Long Beach, CA 90808 (213) 420-4111
Instructor: Marcia Lewis

Orange Coast College, 2701 Fairview Road, Costa Mesa, CA 92626 (714) 834-5651

Pasadena City College, 1570 East Colorado Boulevard, Pasadena, CA 91106 (213) 795-6961
Instructor: Kay Yee

Pierce College, 6201 Winnetka, Woodland Hills, CA 91371 (213) 347-0551

Santa Ana Junior College, 1530 W. 17th Street, Santa Ana, CA 92706 (714) 547-9561

San Diego State University, Art Department, San Diego, CA 92182 (714) 265-5000
Instructors: Arline Fisch; Helen Shirk

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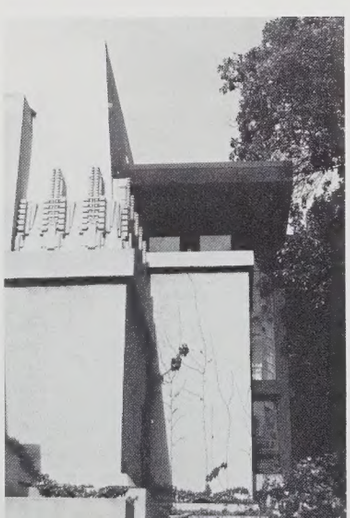

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Bookstores

Davis and Schorr Art Books 1547 Westwood Boulevard, Los Angeles (213) 477-6636

Dawson's Book Shop, 535 North Larchmont Boulevard, Los Angeles (213) 469-2186

Hennessey & Ingalls, Inc. Westland Shopping Center, 10814 West Pico Boulevard, Los Angeles (213) 474-2541. Exclusively art, design, architecture books

Hunters Books, 463 North Rodeo Drive, Beverly Hills (213) 274-7301

Zeitlin and ver Brugge, 815 North La Cienega Boulevard, Los Angeles (213) 652-0784 or (213) 655-7581. Old and used books

Suppliers and Services

Most of these suppliers have extensive catalogs for their customers

Tools and Supplies
Allcraft Tool and Supply 204 North Harbor Boulevard, Fullerton (714) 870-8030 or 870-8031

California Craft Supply, 1096 North Main Street, Orange (714) 633-8891

Friedheim Tool, 412 West 6th Street, Los Angeles (213) 628-4174

Gesswein, Paul H. & C., 676 West West Wilson Avenue, Glendale (213) 240-7113

Pioneer Tools, 3660 B Market Street (at sixth), Los Angeles

Progress Machine & Tool, 1422 South Main Street, Los Angeles (213) 748-7797

Southwest Smelting & Refining Co., Inc. (SWEST), 1725 Victory Boulevard, Glendale (213) 246-8385

Jewelry Casters and Rubber Mold Makers
Art Casters, 608 South Hill, Los Angeles (213) 622-2461

La Valley Casting, 5246 East Beverly Boulevard, East Los Angeles (213) 723-3941

LeVine Polishing Co., 605 South Hill Street, Los Angeles (213) 625-3291 or 625-9762

Schuber & Son, Inc., 5275 East Washington Boulevard, Los Angeles (213) 263-3392

C.F. Weston, 1707 Berkeley Street, Santa Monica (213) 828-8515

Jewelry Casting, Investment, Lost Wax Casting Suppliers
Dick Ells Co., 908 Venice Boulevard, Los Angeles (213) 747-5129

J.F. McCaughin Co., 2628 North River Avenue, Rosemead (213) 573-5781. Main warehouse and factory

J.F. McCaughin Co., 312 West 5th Street, Room 502, Los Angeles (213) 623-6210. L.A. showroom

Dental Jeltrate, RTV, Latex, Silicones and P.V.C. Molding
Commercial Plastics & Supply Co., 2124 West Rosecrans, Gardena (213) 532-9151

Regal Plastics Supply, 249 West Victoria, Carson (213) 538-5860

Westwood Ceramic Supply 14400 Lomitas City of Industry, Los Angeles (213) 330-0631

White, S.S., Division of Pennwalt Corp., 12361 Industry, Garden Grove (714) 598-8711

Electroplaters
Antique Metal Finishing & Silver Plating, 1201 Newport Avenue, Long Beach (213) 597-1636

Boyles-Snyder Co., 6610 Lexington Avenue, Los Angeles (213) 463-4697

Gold and Silver Refiners
David Fell Refiners, 4176 Pacific Way, Los Angeles (213) 262-0121

Englehard Met-Tech, 11880 Western Avenue, Garden Grove (714) 594-2753

Handy & Harmon, 4140 Gibson Road, El Monte (213) 283-8181

Leach and Gardner, 7049½ Vineland, North Hollywood (213) 877-0458

Martin Hannum Refining Co. 810 South Mateo Street, Los Angeles (213) 622-7101

Scrap Gold and Silver Buyers
David Fell, 4176 Pacific Way, Los Angeles (213) 262-0121

General Refining Corp., 614 South Hill Street, Los Angeles (213) 624-4862

Scrap Metal Sellers
Action Sales & Metal Co., Inc. 1807 East Mauretania, Wilmington (just off Alameda and Pacific Coast Highway) (213) 549-5666 Titanium, brass, copper, lead

Airways Metal & Refining Co. 1025 McFarland Avenue (off Anaheim) Wilmington (213) 830-4761 or 775-7208. Brass, copper, lead, bronze

Gabriel Metal & Alloy Co., 2908 Hullet, Long Beach (213) 634-3990. Titanium and exotic metals

Stone Dealers: Precious and Semiprecious
Atlas Gems & Mineral, 6104 Whittier Boulevard, Los Angeles (213) 728-1131

Francis Hoover, 12445 Chandler Boulevard, North Hollywood (213) 761-1505. Wholesale

George C. Houston, 607 South Hill Street, Los Angeles (213) 625-7729. Wholesale

Griegers, Inc., 900 Arroyo Parkway, Pasadena (213) 795-9775

Shale's, 9232 West Pico, Los Angeles (213) 276-8222

Surplus Outlets
Douglas Aircraft Surplus Store Cherry Avenue (1 block north of Wardlow) Long Beach. First and third Saturday of each month

North American Aircraft Surplus Store, La Cienega and 111th Streets (L.A. International Airport-San Diego Freeway Imperial Highway exit). Tuesday and Friday, 10-2:30 PM; Saturday 8-12

Rockwell-North American Surplus Store, Clark and Imperial Highway, Downey. Saturday only, 9-12

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Swap Meets and Flea Markets

Arcadia Edwards Drive-in Movie 4469 Live Oak Avenue (213) 447-9266. Open Saturday and Sunday. Used items

Azusa Foothill Drive-in Movie 675 East Foothill Boulevard (213) 334-0263. Open Sunday only. Used items

Costa Mesa Orange Coast Community College, 2701 Fairview Avenue (714) 834-5651. Open Sunday only

El Monte Starlite Drive-in Movie 2540 N. Rosemead (213 448-7632. Open Saturday and Sunday. Used items

Gardena Roadium Drive-in, 2500 West Redondo Beach Boulevard (213) 321-3920. Open daily except Monday; Wednesday is antique day; new goods on Saturday and Sunday; used items rest of week

Gardena Vermont Drive-in Movie, 17737 South Vermont Avenue (213) 324-0923. Open Saturday and Sunday. Used items

Huntington Beach Golden West College Swap Meet. Golden West and Edinger. Open Saturday only. Used items

Irwindale Swap-O-Rama. San Gabriel Speedway (213) 962-2519. Open Saturday and Sunday. Used items

La Verne Mt. Baldy Swap Meet 3515 White Avenue (714) 593-2110. Outdoors. Open Sunday only. Used items

Paramount Drive-in Movie Swap Meet, 14711 Paramount Boulevard (213) 633-7041. Open seven days. Tuesday: "junk day"

Pasadena City College Flea Market, 1570 E. Colorado Boulevard (213) 449-9006. Open only first Sunday of each month. Antiques and collectibles

Pasadena Rose Bowl Stadium (213) 588-4411. Held second Sunday of each month. Antiques and collectibles

Pomona Mission Drive-in, 10798 Mission Avenue (714) 628-7943. Open Saturday and Sunday. Used items

Riverside Van Buren Drive-in Swap Meet, 3035 Van Buren Boulevard (714) 688-2360. Open Saturday and Sunday. Used items

San Bernardino Swap and Save 689 South "E" Street, National Orange Show Grounds (714) 885-0201. Open Sunday only. Antiques and collectibles, used items

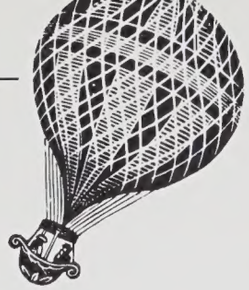
San Fernando Swap Meet, 585 Glen Oaks Boulevard (213) 361-9956. Open Tuesday, Saturday and Sunday. Outdoors

Santa Ana Harbor Drive-in 3700 West McFadden (714) 531-1272. Open Saturday and Sunday. Used items

Sagus Swap Meet, 25000 Soledad Canyon Road (805) 259-3886. Open Sunday only. Antiques, collectibles, used items

Whittier Sundown Drive-in 12322 Washington Boulevard (213) 696-7560. Open Saturday and Sunday. Used items

Worth Visiting



Here are a few places that don't fit into any of my other categories:

The Cutting Edge, 3871 Grand View Avenue and Venice Boulevard (213) 390-9723. Woodworking tools, machinery, books, classes, and exotic woods all under one roof. Tool swapmeet four times a year in the parking lot

International Jewelry Center (New), Northeast corner of 6th and Hill diagonally across from the older nine-story "Jeweler's Trade Building" 607 South Hill Street, Los Angeles

Main Street, Santa Monica between Ocean Park Boulevard and Pier Street. Three blocks of interesting galleries, retail shops, and restaurants

Pacific Design Center, San Vincente Boulevard and Melrose Avenue, Beverly Hills. A group of interior design and accessories showrooms under one roof

Pioneer Tools. Rear of 3600B Market Street and 6th, Riverside (714) 787-8675. Largest collection in the west of old, antique and used tools under one roof

Rodeo Drive, Beverly Hills. Three blocks of the most exclusive and expensive shops in Los Angeles. Jewelers, silversmiths and antique galleries

Standard Cutlery and Supply Co., 9509 Santa Monica Boulevard, Beverly Hills (213) 276-7898. Claims to have the largest selection of cutting implements in the world.

References

Antique Shopping in Southern California, Joan Olson, Elaine Williams. A comprehensive guide to seven counties about antique shows, auctions and shop hours; directions, specialties, maps and articles

The Auction Companion, Daniel J. and Katherine Kyes Leab. New York: Harper and Row, 1981

Automobile Club of Southern California, maps and guide books

California Magazine, November 1982

A Guide to Architecture in Los Angeles & Southern California, David Gebhard, Robert Winter. Los Angeles: Peregrine Smith, $11.95

Inside LA Art, Deborah Ashin. A guide to museums and galleries from Santa Barbara to San Diego. San Francisco: Chronicle Books, 1980, $6.95

LA/Access, Richard Saul Wurman. The official Los Angeles guidebook. Los Angeles: Access Press, 1980, $8.95

The Los Angeles Art Review, Hank Baum, Editor. An art explorer's guide. The Krantz Co. Publishers, 1981, $7.95

Los Angeles Magazine, April 1982

The Los Angeles Times, Sunday Calendar and Metro sections. November 28, 1982

National Directory of Shops/Galleries/Shows/Fairs, Where to Exhibit and Sell Your Wares, 1982/83. Edited by Sally Ann Davis. Cincinnati, OH: Writers Digest Books, $12.95

Recycler: Classified Guide to L.A., #443, November 24–December 1, available on newsstands

Sunset Magazine of Western Living. October, November, December 1982, $1.25

Western U.S.A. Flea Market Directory Summer 1982, $1.00

Photo Credits

1 Photo: Sarah Bodine. **2** Hollyhock house by Frank Lloyd Wright. **3** Craft and Folk Art Musuem. **4** Fowler Museum. **5** Hollyhock house. **6** Fowler Museum garden, Calder sculpture. Photos 2-6: Alvin Pine. **7** Residential street. Photo: Sarah Bodine. **8** Antique tool collectors, Allen Heinhold, left, and John Birbeck in Birbeck's Pioneer Tools specialty shop. Photo: Paula Nelson

Masterpiece in Metal
Tureen and Ladle

Executed by Adolphe Himmel of New Orleans, circa 1861-1877. Coin silver, marked on bottom of tureen only A.H./N.O. Incised above Warranted/ Pure Coin in scalloped rectangular cartouche with pointed ends formed by anthemia. Tureen-height: 11¾", Ladle-length: 15½", Total weight: 65.04 troy ounces. Collection of Anglo-American Art Museum, Louisiana State University. Gift of Dr. and Mrs. A. Brooks Cronan, Jr. Photo: George M. Cushings Photography

Among the most distinguished known surviving pieces of New Orleans-made silver is this tureen made by Adolphe Himmel. With its swelling rococo-revival body decorated with grapevines, grape clusters and leaves—both cast and repoussé—it compares favorably with any tureen made in the upper Northeast during the same period. The Florentine finish on the handles is especially well executed. The matching ladle has a gold wash bowl and carries the same legend, *"C. A. F. Rondeau,"* that appears on the side of the tureen. Charles Augustus Frederick Rondeau was a prominent New Orleans banker who escaped to Rondeau Island in the middle of the Ohio River before New Orleans fell in the Civil War.

The six-quart tureen and ladle were likely to have been made following the dissolution in 1861 of the Hyde and Goodrich Firm, for which Adolphe Himmel had been the chief silversmith. Indeed, all dated pieces bearing the same Himmel mark as that found on the tureen were made after the separation of Himmel from Hyde and Goodrich's successor, Griswold, in 1869. The high rococo-revival form of the tureen and ladle reflect more the style of the 1850s, but it was one that continued to be popular in the South even after the arrival of the Renaissance-revival style. A strong case can be made for the continuing popularity of rococo in the South where its rich, foliate decorative motives would have appealed to romantic, southern taste.

According to family records, Adolphe Himmel was born in Zweibrucken, Germany. He probably left Germany as a result of the 1848 political disturbances and to avoid detection, changed his name to Himmel. So thorough was his change in identity that his real surname had yet to be located.

Himmel's name first appears in the 1852 *New Orleans City Directory* in partnership with another somewhat mysterious and talented foreigner, Christopf Christian Kucher. This partnership lasted only through 1853. Himmel then went to work exclusively for Hyde and Goodrich, and then for its successors, Thomas, Griswold and Company and A. B. Griswold and Company, until 1869. From 1869 until his death in 1877, he operated his own shop. Both his own pieces and those from his various workshops represent the largest corpus of New Orleans-made silverware and vary in quality from some rather pedestrian cups and flatware to the superb design and articulation of the tureen and ladle.

—H. Parrott Bacot
Curator-General
Anglo-American Art Museum

June Schwarcz
a conversation with Jamie Bennett

Above *Bowl 867,* electroplated copper foil, blue-purple enamel inside, oxidized iron plating outside, h. 6½", d. 9¾", 1982.
Opposite *Panel 815,* electroplated foil, 1981. Photos: June Schwarcz

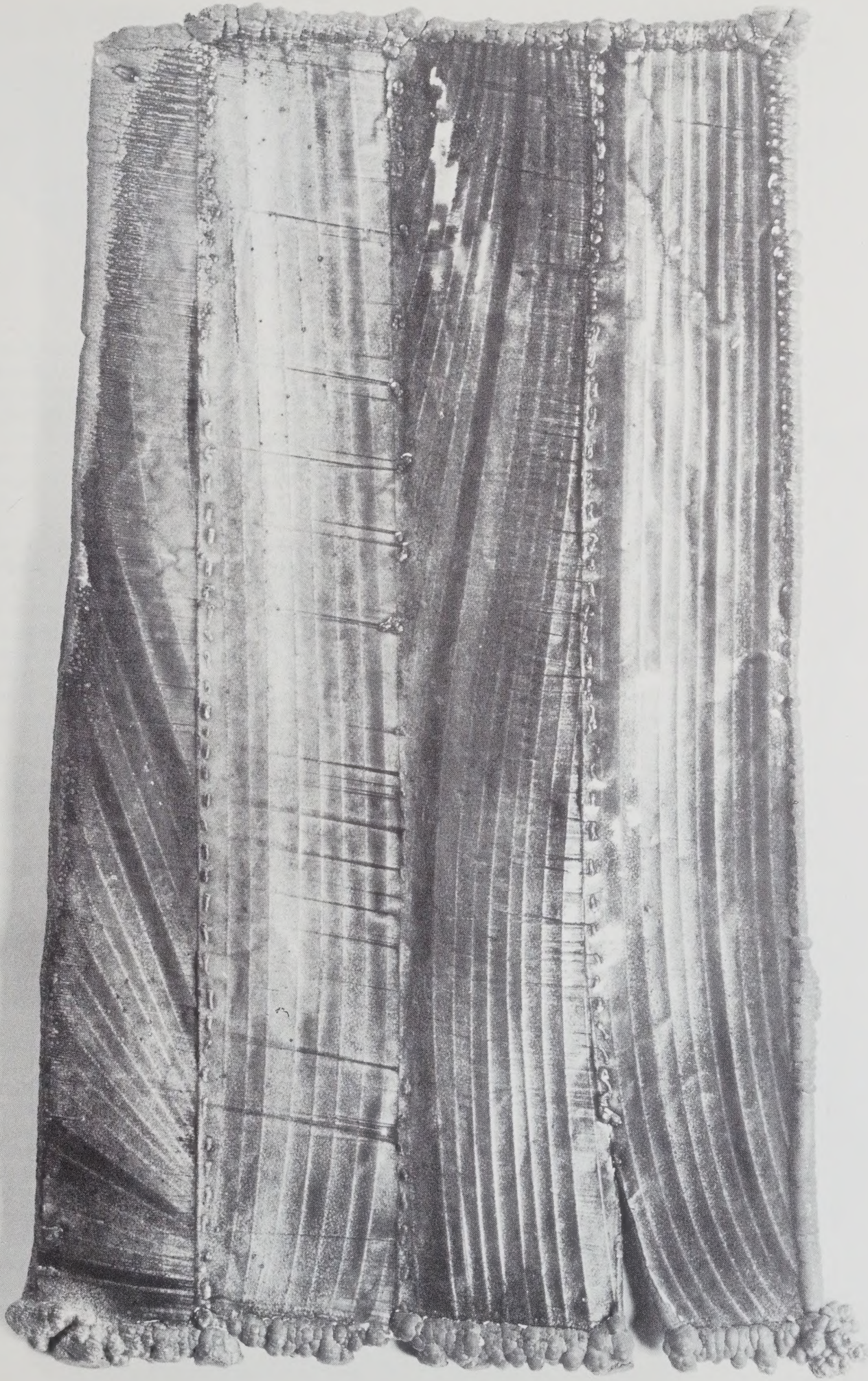
Jamie Bennett is on the metal arts faculty of Boston University's Program in Artisanry, Boston, MA and a contributing editor to this magazine

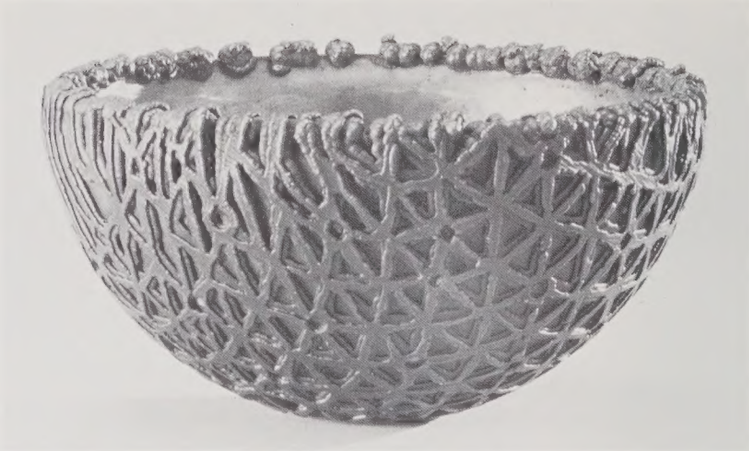
There are few artists who can subtly control the relationship between what they perceive and the manner in which this perception takes form. The ability to communicate an idea tangibly is a thoughtful, emotional endeavor, dependent on a clear sense of purpose and an unencumbered understanding of one's own work. An artist committed to object making is restricted by certain formal limitations and influenced by the history of that object. A vessel, for instance, deals with particular aspects of containment, which impose technical and material limitations. There is also a past sense of form, shape and scale associated with the vessel. There are images and psychological inferences related to the vessel. This has been recorded through the history of that object and cannot be denied.

These restrictions can be assets, however, for in the artist's hands objects can transcend their roots to emerge as intense visual experience about beauty, emotion, intellect, order and form. Being a bowl or box seems at times merely coincidental. However, as a vehicle of expression, the nature of the form in which the idea takes shape must be undertstood by the artist. This understanding is crucial to the consequence of the object, whether the intentions are practical or metaphorical. Eventually, this object will be considered within a historical context and its contribution will be judged against what has preceded it. Beyond the artist's concept and expressive ability, a sense of place must be clear if the object is to emerge with its own presence.

Many historical artifacts maintain this presence. When we observe the primitive feathered capes from Oceanic and Peruvian cultures there is a feeling of power and ritual. The fact that they are garments is not independently significant. The power of the object is also dependent on the sensitivity of the artist to material, texture and pattern with place and time. Moving from culture to culture, we can witness marvelous forms which transcend usefulness, surviving with a force and life of their own. Each of these objects pays homage to history but should exist as if it was the first of its kind.

In our time and culture it is difficult to find the potential of such objects. Perhaps we are not clear minded in the making or perhaps it is a bit premature to try to identify significant works from an existing time period.





Whatever the case, certain artists have been able to survive our complicated existence and have produced singular, honest works. I believe enamelist June Schwarcz to be among these artists whose work has maintained integrity without sacrificing individual exploration.

This conversation with June Schwarcz focuses on her relationship with her work and the role it plays for her.

You have worked simultaneously with several themes, among them the vessel and machinelike wall reliefs. Could you discuss the relationship of these themes?
I usually do work with several different themes. I love many different kinds of objects I consider beautiful, be they fine art or craft, utilitarian or decorative, ancient or contemporary, Western or Eastern. I love the clean geometry of drawings of machinery as well as the organic forms found in nature. Some aspects of these objects stimulate and influence me. Classic art and the European art influenced by classic art excite me the least. I collect as many of the things I love as I can afford and our house can digest.

Do you see any conflict in working with both?
I like to work in different directions at once because it is more interesting that way. I also think it keeps my eye fresher. I am primarily interested in electroplated foil bowls, but if I thought only of them I am afraid I would grow stale.

Could you talk a bit about how you begin your pieces? How do your ideas materialize?
Many ideas come from things I see in nature or other art. Often just a detail of color, pattern or shape is enough to trigger an idea. I see them through the techniques I use which will transform them into something quite different from the original idea source.

Have you ever gotten too close to your resources?
Sometimes my work has been too close to the design source and has become a repetition in a different media, or so close in feeling to the original source that it didn't have a character of its own. These results make me very unhappy and I try very hard to prevent that from happening.

Other ideas grow out of the characteristics of the materials and methods I'm using. This is particularly true of my foil bowls. I play with paper patterns until some manipulations interest me.

My techniques are very slow. It takes at least a week to plate a bowl. I plate only one bowl at a time. I get an idea and can hardly wait to see what it will look like. If something is too predictable it isn't interesting to me. I get ideas easily. The work is so slow that I have forgotten most of them before I can get around to working on them. If I sit down to work without a specific idea the object usually turns out to be pretty dull.

Do you consider yourself an intuitive worker?
I don't know. I suppose all art must be intuitive to some extent. Most of my ideas do grow from things I see. It is then up to me to turn them into something with a life of their own. Maybe it is intuition, maybe it is a trained eye.

What do you think of changes in your work?
Changes in my work are what keep me stimulated and excited. I recently learned about brush plating. I am teeming with ideas for new potentialities.

The whole notion of fine crafts, the commitment to the object, seems to be very ambiguous. I think of people such as Dominic De Mare, Dale Chihuly, Bill Daley and yourself among artists who are clear about this commitment. Could you discuss what role you feel the object plays in our culture?
Abstract art and abstract sculpture, in particular, taught us to look at the form of an object without consideration of its original use. I have a large Japanese mortar for pounding rice and a Northwest Coast Indian paddle. I love them because of the Brancusi sculpture I first saw at the Museum of Modern Art over 40 years ago when I was an industrial design student at Pratt Institute.

The beauty, life, vitality, essence, spirit, or whatever it is, is what matters in the things I want to own and make. It doesn't matter what they are made of, if you sit on them or hang them on a wall. The effect upon a receptive observer is all that matters. My objects are mostly bowls, but I do not expect them to be used as containers. I love the vessel form. It has been a very basic form for all mankind with a rich history. I like to feel a part of that continuing tradition.

Opposite top *Bowl 799,* electroplated design on spun and hammered bowl, copper oxidized black with dots of color on the outside, golden brown enamel on the inside, h. 3⅜", d. 6⅜", 1980. **Below** *Bowl 818,* plique-à-jour, electroplated foil with iron plating on the outside, enamel on copper inside, h. 5⅜", d. 8", 1981. **Above** *Vessel 863,* electroplated foil, iron plated on the outside with some corrosion, gray and golden brown transparent enamel on the inside, h. 7⅝", d. 5¼", 1982. Photos: M. Lee Fatherree

Are you ever distracted by technique and process?
Technique and process stimulate me. I think through them. Their very limitations give me ideas. I am uncomfortable painting because there are not enough limitations. I think those of us who work in the craft media do so because we love the materials and processes. It is the same kind of enjoyment some people get in solving puzzles and problems. We can get effects through our materials impossible in any other way. That is exciting. I do not want to do anything anyone else has done. My husband's technical help enabled me to do things I couldn't have done by myself.

You are held in high regard by most enamelists yet you break many of their rules. Could you speak to this?
I was a product of early progressive education. I wasn't taught any great respect for rules. I learned to enamel from Kenneth Bates's *Enameling: Principles and Practices.* I didn't study enameling with anyone and I didn't realize that there were rules. I will do anything I can to get the effect I want. I am still frustrated by my ability to control opalescents the way I want. Perhaps I can learn from Connie Brauer's low-firing techniques.

I sense a great honesty in your work and a willingness to take risks. Is risk taking inherent to development?
Yes, risk taking is inherent to my development. There are others who refine a technique and have a continuously fresh flow of ideas within these limitations. So many of my ideas are so interdependent with my experiments that I can't work without this exploration. It isn't necessary for everyone. Beautiful drawings have been and will be made with pencil and paper.

What are some of your priorities? You seem to balance your personal life and work very well even in the light of being a new grandmother.
I am a compulsive maker of things I hope will be beautiful. This can be making a garden, clothes (I think of them as art objects if they are good enough) or enamels. I have a feeling of peace when I'm working that I don't have at any other time. Nevertheless, my priority and main pleasure in life has been my family. However, I often felt very divided when the children were growing up. There wasn't enough time in the day to do all I wanted to do and had to do. I hurried every minute that I wasn't worn out. I wish I could have managed it all more calmly. ■

June Schwarcz lives and works in Sausalito, California. Her work has been exhibited internationally, including one woman shows at the Schmuckmuseum, Pforzheim, Germany, 1972; Museum of Contemporary Crafts, 1966; Museum Bellrive, Zurich, Switzerland, 1971. Her work is in the public collections of the American Craft Museum, New York; Oakland Art Museum, California; Minnesota Museum of Art; Johnson Wax Collection; Denver Art Museum and many others. Recent group shows include Craft and Folk Art Museum, Los Angeles, California; "Enamelists, Wall, Schwarcz, Harper" 1982; Elements Gallery, 1981, New York, "Enamels '82,"; George Washington University, Washington, D.C., 1982

Opposite *Vessel 821,* electroplated foil bowl, inside reddish brown enamel, outside enameled dark blue collars, 1981. Photo: June Schwarcz. **Above** *Bowl 866,* electroplated copper foil bowl, various grayed colors inside, iron plated and oxidized on the outside of base, transparent red cuff on outside, h. 7½", d. 5½", 1982. Photo: M. Lee Fatherree

This scene of trees in the forest was taken on an overcast day. Illuminated by soft skylight its muted range of tones should not be too difficult to capture in an etching transparency

Transparency Making for Photoetching

by Allan Liu and Carol Webb

This article is the first of two parts

Photoetching is a radical departure from the traditional direct scratch-through method of etching so well-known to the jeweler. It is an indirect process in which a high-density, high-contrast transparency—carrying the image whose likeness is to be etched—is used as a matrix. The metal plate to be etched is first sensitized to react to the effect of light. Then the transparency containing the image is placed on the plate and the pair exposed to bright light in much the same manner as photographic paper is exposed through a negative to produce a print. Where light penetrates the transparency, the sensitized coating underneath hardens or polymerizes to form an acid resist. Where light is blocked by the high-density image on the transparency, the coating fails to harden and so becomes liable to attack by the etchant.

The simple, straightforward process is easy to learn. Although still relatively new among studio jewelers, photoetching has found rapid popularity. The unfortunate result is that a single look has come to dominate it, reflecting not so much a reluctance to experiment as a lack of knowledge to do so. In no metalsmithing or jewelry craft journal have we seen any detailed information on the real heart of the photoetching process—production of the transparency used as a matrix for the etching. After all, an etching can only be as good as the transparency from which it is derived; its appearance is determined by the nature and quality of that transparency.

Yet too many jewelers give up the crucial step of transparency-making to technicians trained in the photoengraving or graphic arts industries, believing the task too difficult and expensive. Nothing could be further from the truth. The materials are readily available in small quantities at low cost, and the knowledge and equipment needed to use them properly is no more than that possessed by most photo hobbyists.

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Cameras First, some comments about the equipment. When talking about photography one is inevitably asked to recommend a particular camera, as though that instrument lies at the heart of the photographic process. This simply is not true. Indeed, it's quite possible to dispense with a camera altogether and produce an impression by placing an object directly on a piece of film. But if one elects to use a camera, nothing fancy or particularly expensive is required. Any camera will do, just so that it can produce a black-and-white negative.

Because our interest is limited to wearable jewelry, we use the 35mm format. Its 1 x 1½ inch image size is ample for this purpose. This has saved us the expense of acquiring a photographic enlarger. All our transparencies can be made with an inexpensive photographic contact printing frame.

For those who wish to purchase a 35mm camera, we recommend the type called the SLR or single-lens reflex because such a camera offers two features of real value to the jeweler: accuracy of through-the-lens viewing and lens interchangeability. These features are important because, with an accessory bellows unit or a close-focusing macro lens in place of its normal lens, the 35mm SLR is particularly adaptable for taking life-size close-ups of rings and other small pieces of jewelry.

Being the most popular of 35mm cameras, SLRs are available in bewildering profusion. For our purposes, however, we've found that the least expensive SLRs produce results virtually indistinguishable from the most costly. While this is not to say that all cameras are the same, their most significant difference lies in durability. Professional SLRs show their greater cost in more robust construction and in shutters built to withstand heavy daily use. Their lenses are usually heftier and may be somewhat sharper and crisper, but this advantage, noticeable only after high magnification, is usually unnecessary for jewelers.

Instead, we suggest the choice be made from the low-cost cameras aimed at the neophyte. Offering similar features, these are made by all the leading manufacturers and are often sold as loss leaders to familiarize the novice with that manufacturer's line of cameras and lenses. With their solid state electronics automation, these cameras are simple to operate and relatively trouble-free.

Yet this etching transparency from the camera negative gives us a distorted rendition of the scene. It was printed on Kodalith Ortho film and processed in regular Kodalith developer using continuous agitation during development. This method of development is the one usually recommended with Kodalith, but it typically produces the harsh, stark results we see here

All the photo illustrations accompanying this article were taken with just such a camera, the Nikon EM, but comparable cameras by other manufacturers produce essentially identical results. Cameras like it are discounted across the country for prices ranging from $100 to $140, which includes the normal lens. Since it's customary to discount all consumer photographic equipment, you can shop around for the best price.

Films Because the photoetching process begins with a transparency, it might be assumed that the camera negative, itself a transparency, could be used directly on the sensitized metal plate. Or, if the tones need to be reversed, that a continuous-tone positive transparency made from the camera negative could be used. Unfortunately, neither is really suitable for photoetching. The reason lies in the all-or-nothing nature of the etching process itself. Whether the metal plate will etch depends upon whether the photo-sensitive coating on it hardens, polymerizes, into an effective resist. And whether the coating hardens depends on whether light strikes it. This in turn depends on the effectiveness of the transparency which acts to shield and control the light. In other words only those areas of the transparency that we want etched are opaque. In all other areas it remains truly a transparency.

The range of densities needed, then, in an etching transparency is limited to just two: dense black (opaque) and clear. But a continuous-tone transparency such as a camera negative contains a range of tones from the nearly clear to the nearly opaque. A normally exposed and processed camera negative contains no truly opaque areas because such densities are not needed in making photographic prints. Its range of subtle intermediate tones, so necessary for a rich, sparkling print, would be wasted. Indeed, they would be a liability in photoetching. Some of these midtones would be dense enough to shield the photosensitive coating from the hardening effect of light, but others would not. Predicting which areas of the image would be effectively opaque and which would be effectively clear would be a difficult task. To avoid such uncertainty the camera negative can be printed onto a special-purpose graphic arts film, and processed in a companion high-contrast developer. This procedure eliminates the unnecessary midtones and produces the kind of high-contrast, high-density transparency needed for the etching process.

There are many suitable graphic arts films and developers on the market. The words "lith" or "litho" frequently appear in their names. For our work we use Kodak's Kodalith line of graphic arts films and developers because they are excellent products and widely available. Kodalith film comes in a wide assortment of sizes, base types and thicknesses, and spectral sensitivities. We use Kodalith Ortho Film 2556 Type 3 (Estar Base). It's commonly available in the four-by-five inch size packaged 50 sheets per box. For our use we cut each sheet down to 1 x 1½ inches or smaller. Kodalith Ortho film isn't sensitive to red light, which makes it easy to handle in the dark room, and the toughness of its plastic Estar support base makes it particularly suited for repeated use as an etching transparency. Kodak also markets a 35mm version in a roll 100 feet long. While its 35mm size is convenient, this version of Kodalith has an acetate support base less robust than Estar; and, sadly, its tendency to curl hinders its use in still development.

Kodalith developer also comes in a confusing assortment. Kodak markets a half-dozen variations. But three of them are aimed at the high volume use and so need not concern us. The remaining three—regular or ordinary Kodalith, Kodalith Super RT and Kodalith Fine Line—each produces a distinctive look to the etching transparency. Regular or ordinary Kodalith is the most active of the three. It produces the least amount of detail, eliminating midtones and giving the etching transparency a stark, rather harsh look. In its treatment of shadow areas Kodalith Super RT is similar to regular Kodalith, but it produces softer, more detailed highlights. Images processed in Super RT show the characteristic graphic starkness of regular Kodalith in the shadows but retain the soft delicacy of the continuous tone transparency in the highlights. It produces an unusual—and not necessarily useful—hybrid effect.

For maximum overall detail Kodalith Fine Line is the developer we use. When used for still development, its ability to render fine detail is unsurpassed. Unlike regular Kodalith, which drops out most intermediate tones, Fine Line accentuates even the slightest tonal gradients and builds them up into dense etchable lines and dots. Indeed, it's so effective that it can even dig out a textural dot pattern in an area of little detail. This is especially true when the image has been recorded on a high speed camera negative film and processed in a high acutance developer. Because this combination produces grainy images that can be reproduced without a half-tone screen, it's often exploited in the print media. We see this "random dot" look in some large scale advertisements. The jeweler who works on a larger scale would no doubt find this textural dot pattern useful for etching.

Each of the three Kodalith developers discussed here is marketed in powder form in two foil packets, one packet marked Part A and the other Part B. Each part is mixed and stored separately to produce one gallon of stock solution. But because few jewelers will consume a gallon of each solution even in a year's time, most of the developer will oxidize in storage and be wasted. To conserve, we've begun the practice of dissolving only small quantities of the developer powders. This is not a practice sanctioned by Kodak because when only small amounts of developer are mixed, the chemical ingredients may not be dissolved in their proper proportions. This danger can be minimized by shaking each foil packet thoroughly before use.

We've found that mixing up three fluid ounces of each stock solution is sufficient to process about a dozen pieces of Kodalith film 1 x 1½ inches in size or smaller. To save us the trouble of weighing out each portion of powder, we've converted weight quantities into the more convenient volume quantities. With regular Kodalith developer we pour out a measure of 13 cubic centimeters or milliliters (for our purpose we use these units interchangeably) of Part A powder into a small plastic photographic darkroom graduate. This powder is stirred in turn into about two fluid ounces of warm (100°F) water, and then more water is added to make three ounces of stock solution. Likewise, 13cc or ml of Part B powder is measured out and warm water added to make three fluid ounces of stock solution. To obtain accuracy it's important to rap the bottom of the measuring graduate smartly against the top of the table about two dozen times. This causes the powder to settle so that repeatable measuring accuracy is maintained. In all three Kodalith developers the Part A powder is light and fluffy. If not made to settle down in the measuring graduate, the proportion of Part A powder in the working solution of developer would be deficient. The Part B powders are heavier and less finely ground. They settle down easily and present no problem in volume measurement. For Kodalith Fine Line

This is another etching transparency from the same forest scene, but it contains much greater detail. We made it in the same manner as we made the prior one, but with a significant difference: we used the technique of still development

the proper proportion for making three fluid ounces of each stock solution is 11cc of Part A powder and 6cc of Part B powder. For Kodalith Super RT the measurement is 14cc of Part A powder and 11cc of Part B powder.

Developing and Printing Making etching transparencies is similar to making photographic prints. In summarizing the procedures here some details important to the novice may be omitted. To avoid confusion, we suggest that those who've never before handled light sensitive materials spend at least one session in a darkroom. For those without access to a darkroom we recommend reading one of the many books available on black and white darkroom practice. (See the Bibliography at the end of this article.)

Begin the darkroom session by mixing a working solution of your chosen Kodalith developer. Pour a small quantity of stock solution A into a measuring graduate. Then pour an equal quantity of stock solution B into the graduate. Once the two stock solutions are mixed together, they oxidize rapidly. Fine Line developer in particular should be used within 10 minutes or so. This same time limit holds true for the other two developers when using the technique of still development. For that technique to work effectively the stock solutions must also be freshly prepared.

The temperature of the working solution of developer can range from about 68°F to 72°F, but it should not be colder than 68°F or it slows the chemical reactions of the developer. For such small etching transparencies, 7cc of each stock solution are needed, which are then poured into an ordinary six-inch ceramic kitchen saucer. Usually, development takes place in a tray, but trays sold for the purpose are all too large. Any flat, smooth-bottom glass, plastic or ceramic household container will suffice. 14cc of working solution makes a depth of about ⅛ inch in the saucer, which just covers the surface of the film during development. Discard the working solution of developer after processing just one piece of film to insure that the developer is always fresh. Developer exhausts rapidly during development, changing from an essentially colorless liquid to a yellow amber color.

The final task before turning off the white light is to substitute a red safelight for the usual amber or yellow green safelight used in photographic printing. Kodalith Ortho film is sensitive to the usual safelight colors used with photographic papers, but it's not affected by red light. A 7½ watt red utility bulb available in most hardware stores works well as a safelight if kept at least five feet above the development area. With the white light out and the red safelight on, open the package of Kodalith film and cut one sheet down to the size needed. One side of the film, called the base side, is shiny and dark maroon in color, while the other, the emulsion side, is dull and grayish beige in color. The emulsion side is coated with the light-sensitive silver halide salts. It is the side against which the 35mm camera negative is placed and the side through which the exposure to white light is made. The 35mm camera negative film likewise has a base (shiny) and emulsion (dull) side. The two films are sandwiched together in a photographic contact printing frame so that the emulsion of one is against the emulsion side of the other.

Printing frames come in two styles. The first and older is a wooden frame resembling a small window or picture frame on one side of which is a sheet of glass. On the other side is a hinged folding back which can be removed. The second kind of printing frame is just a stiff padded metal plate over which a sheet of heavy plate glass has been hinged at one end. The second style is preferable because it is front or top loading and so easier to use. Both frames are available in most photo equipment stores, but it's just as easy to make one. Take a piece of heavy plywood and tape a piece of plate glass to one end to form a hinged glass-wood sandwich. Open the hinged plate glass and place a half-dozen or so sheets of newsprint or comparable soft paper on the plywood to serve as a cushion. Then tape a piece of smooth surfaced red or black construction paper over the cushion. A dark colored paper is necessary to prevent the exposure light from penetrating to the white newsprint cushion and bouncing back up through the base of the Kodalith film.

To print, open the printing frame and place the two pieces of film down on the dark construction paper. The Kodalith film should be on the bottom right next to the construction paper. The camera negative should be on top of the Kodalith film, and the emulsion sides of the two films should be touching. Now close the plate glass and check to be sure the weight of the glass holds the pair of films in tight contact. If not, place weights on the edges of the glass. If tight contact is not maintained during exposure, the image printed onto the Kodalith film will be fuzzy. A 15 watt white light bulb should be placed four to five feet above the printing frame. To expose the Kodalith film turn on the bulb for about four to five seconds. Then open the printing frame and remove the Kodalith film for processing.

To begin processing, place the Kodalith film in the kitchen saucer filled with a working solution of one of the Kodalith developers. Check to be sure the film is emulsion side up in the saucer. Then rock the saucer gently so that the surface of the film is covered with developer. Continue gently agitating the film, and after about one minute and 45 seconds to two minutes and 15 seconds of development time an image begins to appear. First, the shadow or dark areas of the scene become visible, then the midtones and highlights. The transparency will be fully developed in 2½ to 3½ minutes, depending on printing exposure time and the overall density of the camera negative. Now carefully remove the transparency with your fingers or with photographic print tongs, noting the wet emulsion is very soft and easily scratched.

To stop development, place the transparency in a tray holding about a pint of dilute acetic acid, a one to three percent solution. The acetic acid stops development instantly and neutralizes the basic pH of the developer. After about 30 seconds, transfer the transparency to a tray or other container holding at least a pint of photographic fixing solution whose primary ingredient, ammonium or sodium thiosulfate (photographic hypo), dissolves the unexposed and undeveloped silver halide compounds remaining in the emulsion. This action occurs visibly as the milky, whitish areas of the film begin to clear. If this weren't done, these uncleared areas would darken upon exposure to light and obliterate the image.

After remaining in the fixing bath for twice the clearing time, the transparency is transferred to a running water bath. After washing for about 15 minutes, the transparency is hung up to dry in a dust-free place.

To achieve even more detail we changed from using regular Kodalith developer to Kodalith Fine Line developer. Used with the technique of still development, Fine Line is formulated to give maximum possible detail

The acetic acid stop bath should be discarded at the end of the darkroom session, but the fixing bath can be saved and used over and over again. When Kodalith film requires longer than three minutes to clear, the fixing bath is exhausted and should be discarded.

After the transparency has cleared in the fixing bath, the white light can be turned on to examine the results. If the image on the transparency is neither too dark nor too light, it is a usable etching transparency. If, on the other hand, the transparency is too dark, reduce your printing exposure time; if the transparency seems too light, increase it. These guidelines are rather vague, but in truth it's difficult to be more precise because there's no single correct printing exposure time. It's a matter of personal taste and intention. In fact, Kodalith is capable of giving at least three different interpretations of the same camera negative. The reason is that the camera negative produces a range of tones or densities, but Kodalith is capable of recording only a narrow band of these densities. Thus, you can select which narrow range of tones you wish to record by varying the exposure time. In doing so, you can get different interpretations of the image and control which areas of the image you wish to etch.

Alternative Developing Methods So far it appears that the use of Kodalith sacrifices detail in two of the three major areas of the image. But this is not altogether true. With the technique of still development, the same transparency can achieve near maximum detail in all three major image areas.

Thus far in our discussion of printing procedures we've specified continuous agitation during development. In still development the Kodalith film is slipped into the developer *emulsion side up* and agitated continuously for the first 45 seconds. Then it is pushed to the bottom of the saucer to lie there absolutely still for the remaining two minutes of development. As mentioned earlier nothing happens until a minute and 45 seconds or so into development. Then the dark or shadow areas of the image appear. Since these were the least dense areas of the camera negative, they held back very little of the printing exposure light. Consequently, on the Kodalith transparency these areas develop first and darken fastest. But in so doing they exhaust the Kodalith developer more quickly than do the mid-value or highlight areas. As the developer becomes exhausted, its activity slows down. Moreover, bromine and other by-products are released from the emulsion in the shadow areas, further inhibiting development. Thus, while the shadow areas are the first to develop, they are also the first to stop developing. But this is true only if the Kodalith film is left undisturbed. If agitation continues, then fresh developer is brought to bear against the shadow areas, and they will continue to darken. Without agitation, development in the shadow areas is virtually stopped while continuing in the mid-value and highlight regions. Still development, then, permits a kind of compensating effect whereby detail can be retained in all three major areas of our image.

We should point out, however, that still development makes a noticeable difference only when printing from continuous-tone materials. When printing from high-contrast negatives or positives, we get the same result whether we use still development or continuous agitation. Nor does it seem to matter which Kodalith developer is chosen. But variations can still be brought about by changing printing exposure times. This caveat aside, we believe that use of the technique of still development would be an important first step in breaking out of the familiar style that has come to characterize much of photoetching—namely, the semisilhouetted image lacking in detail so often produced by continuous agitation development. Still development builds detail in all areas of the etching transparency; and it works with any of the Kodalith developers discussed here. But, as mentioned earlier, for maximum detail use Kodalith Fine Line developer.

Yet even Fine Line may not give sufficient detail, particularly in the densest highlight areas recorded on the camera negative. For more detail, a controlled fogging procedure that photographers call pseudosolarization, or the Sabattier Effect after its 19th-century discoverer, can be used along with still development. If, during still development, you briefly turn on a low intensity white light just after the shadow areas of the image have appeared, you will not appreciably affect these areas because they have already been chemically reduced to metallic silver. But you will affect the mid-value and highlight areas because they haven't been reduced and remain as light-sensitive silver halide salts. Upon exposure to white light the mid-value areas darken, yet retain most of the detail imprinted during the initial printing exposure. On the other hand, the highlight areas, being the densest areas on the camera negative, held back most of the printing exposure light and so allowed little detail to be imprinted onto the etching transparency. Thus, upon exposure to white light during development these highlight areas of the etching transparency will also darken, but as little detail was imprinted in the initial exposure, they will darken overall and appear as though enveloped in a heavy fog—hence the term "fogging exposure."

Sometimes a partial reversal of tones in the highlight areas gives the appearance of both a negative and a positive. This partial reversal of tones has come to be recognized as the solarized look. Achieving this look is difficult, however, for it depends largely on the highlight areas having just the right density gradient. We seldom try for the solarized look, content to use the technique outlined here as a controlled fogging procedure to tone down highlight areas. When white light is used during development, its intensity and duration, as well as the point in development at which it is turned on, all affect the final result. This procedure therefore requires considerable experimentation to be effective.

If, instead of trying to increase detail, you want to lessen or obliterate it, use the technique of masking. A mask can be produced by drastic underexposure of our Kodalith positive. This results in a very weak positive transparency in which only the shadow or dark areas of the scene register as an image. If this weak positive is then taped onto the camera negative and the pair used as a kind of negative from which to make our etching transparency, a final image is produced

This is a high-contrast negative made from an etching transparency. Because the tonal values in the scene are predominately dark, we decided to reverse them to give us more light areas than dark ones. This reduces the amount of etched area and lightens the mood of the scene without losing the sense of the image. We dropped out even more detail by printing from an etching transparency that had been somewhat underexposed

whose highlight and mid-value areas are reproduced normally but whose shadow areas are rendered lighter and with more detail. The weak positive has acted like a mask in the shadow or dark areas of the scene to hold back light during the printing exposure. The effect can be varied by increasing or decreasing the density of the weak positive. Indeed, you can even increase the density to the point where the positive image overpowers the negative image to give us reversed tones in the shadows. Another useful effect occurs when the weak positive is taped to the camera negative so that the images are slightly offset. This yields a bas-relief effect on the etching transparency.

Kodalith Ortho film's insensitivity to red light also permits masking. Detail in the camera negative can be lessened or eliminated merely by painting the offending area with a red dye. Use of a red dye on parts of the camera negative is the equivalent of exposing those areas through a red rather than a white light. And since Kodalith Ortho film is not affected by red light, this is the same as not using any light at all.

A red dye is manufactured for the purpose. It's called Crocein Scarlet by Kodak and new coccine or neo-coccine by others. But any artist's red dye will serve, including common household food coloring. A few drops of food coloring in two or three milliliters of water is sufficient. A drop of a wetting agent such as Kodak's Photo Flo should be added to the solution to break down the surface tension of the water. This promotes penetration of the dye into the film's surface.

The dye or food coloring is applied to the emulsion side of the camera negative with a small artist's or photographer's spotting brush. Whether detail will be lightened or completely eliminated depends on the amount of dye used. To lighten, dilute the dye or food coloring to a pinkish color. To obliterate, keep the color a medium to dark red. If too much color is applied or a mistake is made, soak the camera negative overnight in a water bath to which a few drops of household hypochlorite bleach have been added. This will usually clear the film of all traces of the dye.

Of course, red dye can be applied to a high-contrast positive or negative as easily as to a camera negative. But its use may not be necessary. By now it should be apparent that the mere act of printing a camera negative onto a high-contrast film such as Kodalith drops out some detail. And more detail can be eliminated by printing the resulting high-contrast transparency onto another piece of Kodalith film and so on. Sometimes just printing through several generations this way is sufficient to lessen overall detail and give the desired effect.

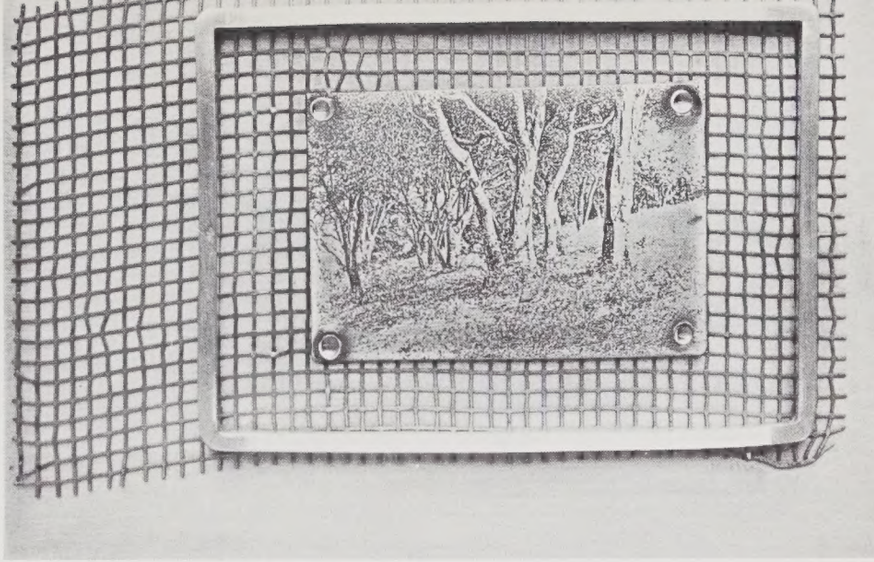
To eliminate detail in specific areas, it's usually more effective to use red dye. Indeed, when working with a high-contrast transparency rather than a camera negative, an even stronger material, called photographer's opaque, is available. As its name implies, it's a very dense, water-based paintlike substance which can be obtained in either red or black. It's applied with a spotting brush in much the same manner as red dye. And a household substitute that works well enough is the familiar black marker pen with instant drying ink used for writing on glass and other nonporous surfaces. One of these fine-point black markers can fill in areas on high-contrast negatives that would otherwise print as unwanted detail. But don't use marker pens or photographer's opaque on a camera negative because the continuous tones of the camera negative are better handled with red dye, which is more subtle and controllable in lessening detail. It can be blended into an area without leaving traces of its use. Photographer's opaque or marker pens, on the other hand, would be more apparent on the smooth tones of the camera negative. These materials work best on the limited tones of high-contrast films.

Dye, marker pens and photographer's opaque all lessen or eliminate detail by adding density to the negative. The greater the density, the less the detail printed through onto the positive. But sometimes it's simpler to eliminate detail by removing it directly from the positive. Since the image is composed of metallic silver, it can be chemically dissolved in whole or in part. This is just what takes place when a photographic reducer is applied. Actually, the so-called reducer works not through chemical reduction, but through chemical oxidation by combining with the metallic silver to change it into a soluble silver salt.

One of the oldest and certainly the most popular of these products is called Farmer's Reducer after its 19th-century inventor. Farmer's Reducer is a dilute solution of two chemicals commonly used in photography: sodium thiosulfate (photographer's hypo) and potassium ferricyanide. The ferricyanide combines with the metallic silver in the image to produce a silver salt that is soluble in thiosulfate. Kodak markets Farmer's Reducer in handy quart-size packets, but it's just as easy to make from scratch. Using volume measure, make up two stock solutions: one of 20% potassium ferricyanide, and the other of 40% sodium thiosulfate. To 12 parts of water add two parts of the thiosulfate stock solution, then one part of the ferricyanide stock solution. For local reduction use a cotton swab or spotting brush to apply this working solution to the emulsion side of the transparency. For overall reduction submerge the entire transparency in the reducer.

The diluted working solution of Farmer's Reducer should be a pale lemon yellow color. Its color will gradually fade over time. If it fades quickly—say five to 10 minutes—the mixture is a very strong one that should be used with caution. Properly mixed, the reducer's lemon yellow color should fade almost imperceptibly. The working solution will be most effective during the first 15 minutes of its preparation. For the next half hour it will be slower and softer working, and after about an hour's time it will have lost its efficacy and should be discarded. A stronger working solution can be prepared by using less water—say eight to 10 parts. The more diluted the solution, while slower in action, the easier it is to control.

When using a brush to apply Farmer's Reducer, be careful not to get it on the metal ferrule. The ferricyanide reacts with ferrous metals to produce a stain that can mar the transparency. A few drops of fingernail polish



Here we have etched the image, now laterally reversed, in ferric chloride on a piece of copper 1x1½ inches in size and darkened with liver of sulfur. The etching is riveted to a sheet of nickel silver separated by a brass screen and framed by a raised sterling silver bezel

at the juncture of brush and ferrule will seal the area and block the corrosive action of the ferricyanide.

While we limit our use of Farmer's Reducer to high contrast transparencies, we could easily use it on camera negatives that have been overexposed or overdeveloped. Of course, we run a serious risk here. Once metallic silver has been removed, it cannot readily be put back. But if over reduction should occur, all is not lost. If not too much metallic silver has been dissolved away, some density can be restored through photographic intensification.

There are a number of intensifiers available. Most of them are of the bleach-redevelopment type. One that is popular and commonly used is called chromium intensifier, a solution of potassium bichromate (or dichromate) to which a small amount of hydrochloric acid has been added. Applied to the emulsion side of a transparency, the solution bleaches away the image. Upon redevelopment in a photographic paper developer, the image returns, though stronger than before the intensification procedure. The bichromate has reacted chemically with the metallic silver of the image, leaving a deposit of metallic chromium which strengthens the image. As with Farmer's Reducer, Kodak packages the necessary chemicals to make small quantities of chromium intensifier. But unlike Farmer's Reducer we've found chromium and the other intensifiers to be less predictable in their results and thus less useful.

Though we remain partial to Farmer's Reducer, we've found that common household hypochlorite bleaches such as Chlorox or Purex have a similar reducing action. Used full strength or diluted one-part bleach to one-part water, they will dissolve the silver-based image quickly and completely. They do so, not by making the metallic silver image chemically soluble, but by dissolving the entire emulsion layer from its support base. This drastic physical action leaves a depression on the surface of the transparency where the bleach has been applied. This is not troublesome in making contact prints, but it could become noticeable in enlargements. As with Farmer's Reducer the degree of dilution controls the rate of reduction. Greater dilution slows the bleaching action; less dilution increases it. A working solution prepared from one-part bleach to four- or five-parts water makes an excellent all-around reducer. A cautionary note: use disposable cotton swabs or a synthetic-haired brush to apply the bleach, which is hard on natural bristles.

Creating Images without a camera So far we've assumed that all our images have been camera-derived, but this doesn't have to be. For those inclined to drawing it's possible to make an etching transparency by hand. One can draw directly onto a sheet of clear acetate with pen and ink or an opaque marker. One can also treat this handmade transparency as a kind of negative and print it onto a piece of Kodalith film to reverse the tonal relationships. It's also possible to create abstract designs by applying fingerpaints or other translucent media to clear acetate. The technique of marbling, used by bookbinders and other paper artists to create abstract patterns, is another useful craft. Once the design is created, it is transferred by photographic means to the metal plate. These and similar techniques can achieve a fluid, often amorphous look that's unique to the photoetching process and difficult to duplicate in the traditional scratch-through method of etching.

Found objects are another source of patterns and designs. A solid object placed on a sheet of light-sensitive material and exposed from above creates a silhouette known as a photogram. For etching purposes it would be more useful to employ a translucent object in this manner. Thus, tree leaves, insect wings and the like can all be placed on a sheet of film in a printing frame and exposed to create a tracing of their structures much like an x ray. Any common translucent household materials, like tissue paper or fabrics, can be substituted as well. Moreover, where appropriate, rubbings on thin paper can be taken from textured solid objects and printed through onto Kodalith film. The materials and techniques that can be employed are limited only by one's imagination.

Although we've said that for making small, jewelry-sized etchings a photographic enlarger is not necessary, it remains nonetheless a handy instrument to have. It can serve as a useful production tool for the jeweler. Changing the scale of a drawing, for instance, is often a tedious chore using a grid system. But after photographing the drawing we can easily enlarge the image to any size needed. And if we have access to an enlarger designed to accept a camera negative bigger than the size we normally use—for instance, a 4 x 5 enlarger for 35mm film—we can also reduce the image. For reductions an enlarger with a long bellows, say six inches or more, is needed. The reason is that the enlarging lens must be further separated from the negative for reductions than for enlargements. Enlargers designed to handle bigger film sizes require longer focal length lenses to adequately cover the larger formats, and longer focal length lenses require longer bellows. Hence, these larger format enlargers with their longer bellows are particularly suited for making reductions. Indeed, for those who prefer to work from hand-derived images an investment in a prograde enlarger can be more fruitful than an investment in a camera. Drawings and other translucent materials can be easily fitted in the bigger negative holders of these enlargers. These materials can then be treated like negatives and their images projected directly onto Kodalith film. Used in this manner such an enlarger would serve in place of a camera. ■

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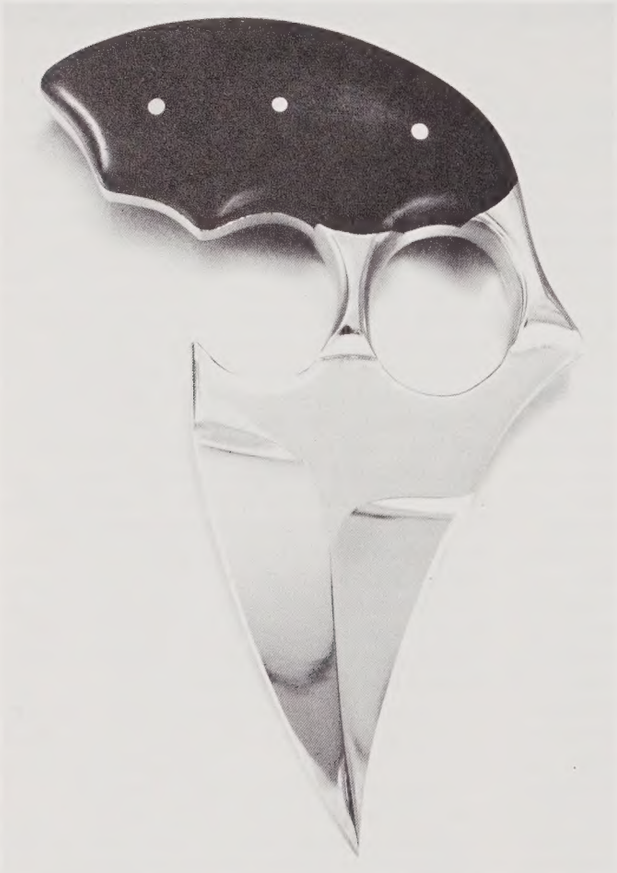
Successful Combinations Studio and Gallery

by Jennifer Place



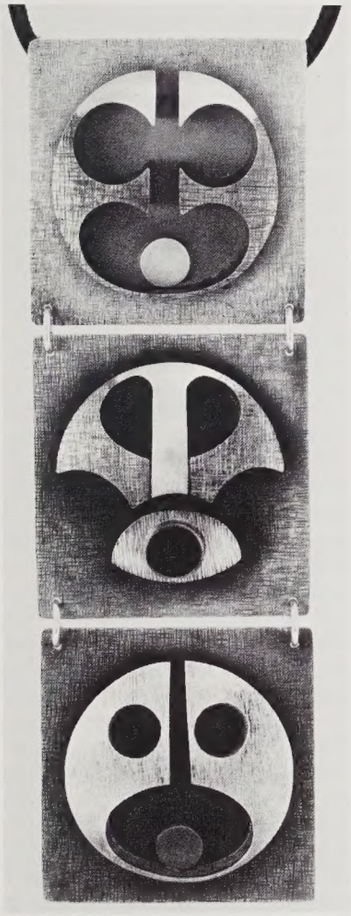
When Theo Janson and Vanessa Compton moved into the winding basement studio space on Toronto's Markham Street in May 1978, they were not thinking that a short four years would find them moving again to a larger windowed storefront, that they, and the others who were to join them, could both produce and sell their work in a city that was not yet prepared for contemporary, unusual jewelry. Not that it has been easy, but at a time when many small businesses simply cannot stay alive, survival is its own form of success, and Studio Jewellers has survived.

In 1978, however, they were thinking only that they were ready to leave the Harbourfront complex, a tourist-oriented area where they had both been residents in the metal studio and where the public streamed through to watch and ask questions. The opportunity of a new space came up fast, through one of the other gallery owners on Markham Street. Through the sponsorship of the man who owns the particular stretch of the street, renamed Mirvish Village, the rents for artists were very low and the street was mainly populated by galleries, studios and related bookstores. Although they moved into the space in May, it took six months to decide how to gather equipment and set up the studio and gallery areas to best accommodate lighting and display cases. Compton moved to the country, thereby limiting her participation, and Monica Harhay was asked to join them, before Studio Jewellers officially opened its doors in December.

A banner and a sandwich board on the sidewalk announce the store's side entrance. They designed the space with both display cases and workbenches in the front room. Storage and bookshelves are in a hallway, and the back room, the "magic room," is reserved for soldering, sanding and buffing. The workbenches are situated in such a way that the jewelers can be working while customers are looking at the pieces on display. It has proved helpful for people to see something of the process of creating, which has also boosted their custom orders. The obvious difficulty is the constant interruption, but over the years they have learned to reserve difficult work for times when the store is not open and to get up only when a customer really needs assistance. "Polite, but definitely not agressive" has proved the most practical attitude.

In an article for *Craftsman* magazine, Janson and Harhay talked about their early attitudes toward retailing: "When we opened we stocked the showroom with about 50 one-of-a-kind and production pieces, mainly in silver. We expected that if we had a reasonable location with affordable overhead and tasteful presentation, the rest would take care of itself. The responsibilities for running the shop were to be split between the three of us in order to minimize our time away from the bench. We decided not to hire sales help or to do any advertising. Looking back, we were entranced by the mystique of 'owning your own shop.' Our sales increased, but not at a rate we had hoped for, and it seemed that 'mystique' wouldn't cash at the bank. We learned fast that a casual approach results in casual returns. We learned that we didn't eliminate the middleman and keep all the profits. We *became* the middleman, and that costs in both time and money. Having had our lessons, none of us now begrudge a retailer one nickel of the money realized from selling our work."

Janson and Harhay are financial partners now, but in the beginning they had taken out a small loan to open the store, and it was paid back in a year by all three. Rent is shared, as are major tools and general supplies, but hand tools and materials are individual purchases. Compton still shows her work at Studio Jewellers, but works in her own country studio. They now also show the work of Mimi Shulman, Shelly Fowler, Sandra Noble Goss and Andrew Goss. Last year Sherry Otterway joined the studio after a brief stint at Harbourfront. New jewelers are asked to join on a six-month trial basis, and they pay an extra $15 per month to cover the costs of boxes and other shared items. They consult often on what to show, prices and display ideas. The shop takes 20 percent for selling a piece of someone else's; five percent if you work at the studio; and 15 percent if you have worked there but have since moved your studio space. A good percentage of the customers want specially commissioned pieces, either by knowing a particular jeweler's work or by just coming into the store with an idea. In that case, the job goes to whoever does the most appropriate work, or, if it is a task anyone can do, to whomever is



Opposite left Theo Janson, *Mask,* copper and brass, 21.4 x 15, 2 x 3.3 cm. **Opposite top** Sherry Otterway, *Knife,* double-edged push dagger, AEBL steel and African blackwood, 10 x 11 cm. **Top** Vanessa Compton, *Cat Ring,* cast sterling. Photo: Peter Hogan. **Above** Monica D. Harhay, *Oo, Ee, Ah,* silver, copper and brass, 16.5 x 5.5 cm

least busy. Profit is an individual matter and varies a good deal. But because rents are low, it has not been too hard to stay in business, and most times they do better than that. A definite goal, however, remains to be less concerned with next month's income.

The four women not only all rented studio space at the Harbourfront at one time, but they also studied at Sheridan College School of Arts and Design. Janson, originally from New Jersey, also took workshops at Penland and Peter's Valley, and graduated with a degree in Fine Arts from the University of Florida. She apprenticed with metalsmith Frank X. Phillips in Toronto, famed for his hand-engraving, before branching out on her own. She has shown her work steadily since 1973, and it has received not only accolades but also awards, such as the "Best in Silver" from the first annual Harbourfront Craft Fair in 1980. She received a grant to travel as a delegate from the Ontario Crafts Council to the 1978 World Crafts Council Conference in Kyoto, Japan, and her jewelry is represented in the Artisan '78 Chalmers Collection and the Massey Collection.

Theo Janson's work delights both the eye and the imagination. She is not afraid to be bold or show humor in her pieces. The best known work combines antique and ethnic beads with silver pieces of her own design. More universal are the brooches that incorporate fantasy figures, stars, smiles and clouds. They dance and tease. Masks, made in brass and copper, are a more recent dimension. Meant more to be displayed pieces, they begin with cut paper images so the resulting metal form is never overworked or one-dimensional. Her next challenge will be returning to a material that has always intrigued her—enamel—particulary for its potential as a three-dimensional medium.

Monica Harhay, from Toronto, spent two years in Ryerson Polytechnical Institute's Interior Design program before completing the metals program at Sheridan. She also took workshops at Humber College. In addition to her studio work, she has taught both beginning and advanced jewelry making at Seneca College of Applied Arts and Technology since 1975. She has also been active in the Ontario Metal Arts Guild, serving in a variety of ways including Show Chairman for the 1978 Annual Juried Exhibition. Her work has been widely shown in Ontario, and is also included in the Massey Collection.

Harhay's work is cool, structured, technically immaculate. She concedes to the influence of her architect husband, but stronger ones perhaps are the texture, color and intricacies of fabrication. Brass, gold in all its different colors and silver are woven in flat panels that are used as such in cuffs or neckpieces. It is the unexpected change of metal that can occur in a piece that she feels is interesting for the wearer, where, for example, a sliver of brass shines between two layers of silver on the edge of a pendant. Her pieces give the pleasure of being perfectly crafted statements, strong and elemental.

Vanessa Compton was born in Montreal, and studied there at Sir George William's University before moving to Toronto to study at Sheridan. She also took workshops at the Nova Scotia College of Art and Design, Mohawk College and at Peter's Valley. She currently has her own studio in Jarvis, Ontario. In addition to numerous shows and awards, she was commissioned by the Royal Ontario Museum to design jewelry based on objects in their collection, as well as for a variety of special occasions. The Massey Collection also includes her work.

Vanessa Compton's imagery is as fascinating as her techniques. One first notices the small groupings of tiny animals, cast miniature sculptures in silver or bronze, that are based both in reality and in mythology. A tiny baby holy goat or a larger figure of a satyr are friendly, entrancing creatures. They are directly and honestly carved with a heated pick and a bit of hard wax, the result being akin to an artist's spontaneous sketch with all its life and charm still present. The jewelry is more polished—rings that depict ocean waves, twining leaves or fluid animal shapes, for example—but no less personal or remarkable.

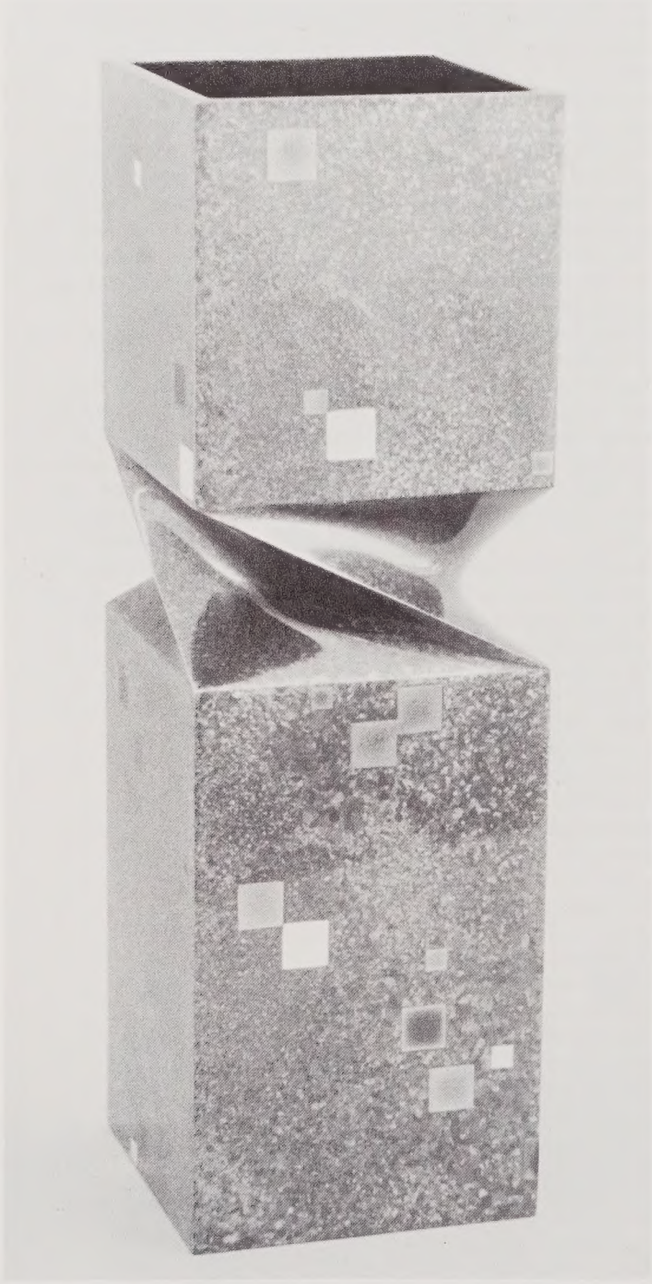
Sherry Otterway, who worked at Studio Jewelers for most of last year, was born in England and studied at the Inchbalds School of Design before following her family to Canada and studying at Sheridan. She also studied knifemaking with Adam Smith, and this year one of her knives won "Best in Show" at the annual Metal Arts Guild juried show. In 1980, she was one of three jewelers to show work at the Ontario Crafts Council Gallery in an exhibit entitled "Metalmorphics."

Otterway's interest in metal is two-fold. Best known so far have been her neckpieces and pins incorporating animal bones and skulls and erotic imagery. The pieces are provocative, but they are not without charm and whimsy. A stylized ant's head, for example, has antennae that wrap around the neck of the wearer; a pin incorporates the beak of a squid, enlarged and carved from epoxy, in its imagery. The second interest is in knives, both as personal weapons and as beautiful, organic, forms. Handles are cherry or tulipwood, and blades are steel. There is little additional decoration to compete with the flowing shapes of the knives themselves, almost impossible not to touch or hold.

With the move to a new windowed storefront, Studio Jewellers also hopes to make changes in the format of their operations. For the first time, for example, they will hold more formal exhibitions, and this will presumably include openings, more press coverage and increased sales. They plan to be in closer contact with the fashion industry as a way of heightening visibility, and are thinking in larger terms about publicity, with a public relations packet in the works. But even more than the important practical matters, all the jewelers involved with the move and the new shop have been given reason to create new work. ■

Kyoto Metal an Exhibition of Contemporary Japanese Metalwork

by Elizabeth Skidmore Sasser



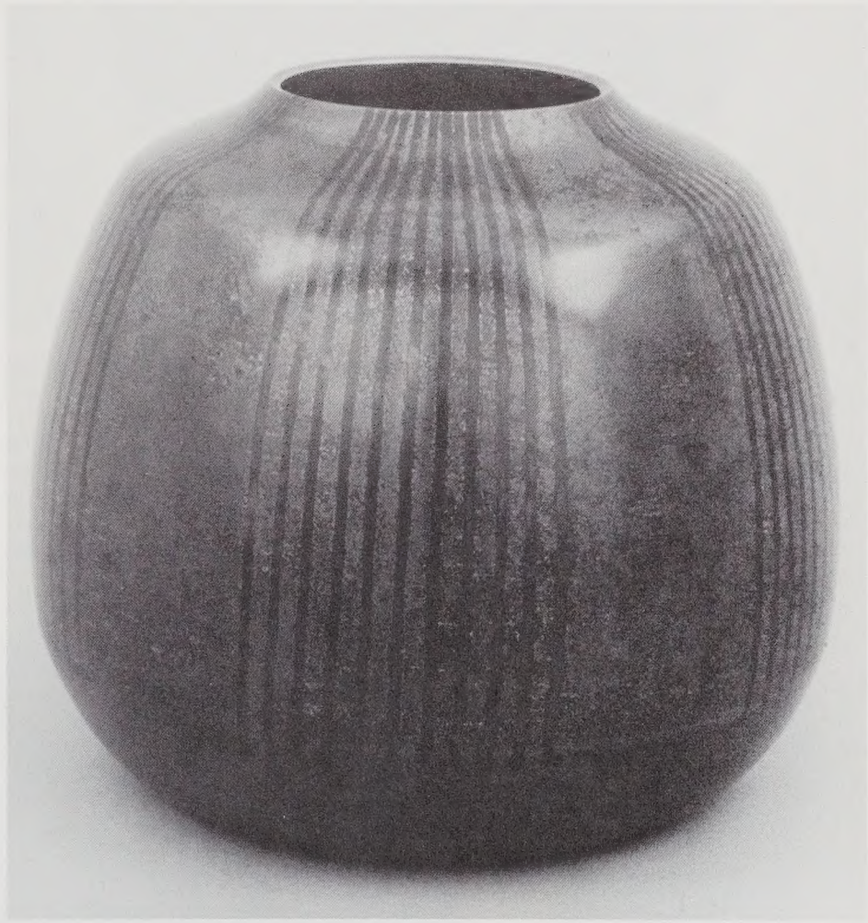
Quoting the scholar, Nyozekan Hasegawa, Masataka Ogawa calls Japan the country of "the culture of hands."[1] Over the centuries, no hands have been stronger or more skillful in carrying on the traditions of distinguished craftsmanship than those of the Japanese metalsmiths. The origins of metalcraft are associated with the Yayoi period (300 B.C.-A.D. 300). During this time, metal objects —swords of bronze, mirrors, iron axes—were imported from the Continent to the islands; however, by the first century A.D., the imports were being duplicated by Japanese craftsmen. The native metalworkers also made bell-shaped bronzes called *dôtaku,* as well as personal ornaments and horse trappings. At that moment in history when the Byzantine Empire was boasting of the grandeurs of the newly completed Church of Hagia Sophia, Buddhism was introduced into Japan AD. (538-645). Buddhist shrines and temples displayed bronze figures of the Buddha and companion Bodhisattvas; incense burners, vases and other utensils, hammered from metal, were embellished with designs in *repoussé* or carved relief. Temple bells were cast in bronze. The casting techniques were used to produce coins, government seals and cinerary urns. Many different metals were utilized by the Japanese; the term *gokin* refers to the five primary ones: gold, silver, copper, tin, iron.[2] From these, various alloys were formed, for example, *hakudô,* "white bronze" resulting from a copper alloy with a high percentage of tin, *shakudô,* a "niellolike" copper alloy, and *chûjaku sawari,* a brasslike alloy of copper, tin and lead or silver (p.30). The Kamakura period (A.D. 1185-1392) replaced the patrician tastes of the Heian era (A.D. 794-1185) with the powerful presence of the warrior class. The *samurai* war lords recognized in the growth of the Zen Buddhist sect a stripping away of nonessentials which matched the simplicity of their own rugged lifestyle. The popularity of Zen, fostered by the *samurai,* was further enhanced, in the Muromachi period (A.D. 1392-1573), by the introduction of the tea ceremony. Tea brought a new market for the metalcraftsmen to serve. The "way of tea" needed iron kettles, in which water could be boiled, metal trays and vases. To fill these needs, the Ashiya kettle manufacturing enterprise was initiated in Kyûshû and that of Temmyô was opened in the Kantô district (p.30). When the simple style of tea (*wabi*) was adopted during the Momoyama period (A.D. 1573-1615), kettles meeting the austere standards of the famous tea master, Sen No Rikyu, were made in the *kama-za* (kettle factory) at Sanjô in Kyoto (p.30). At the same time, swords and sword guards (*tsuba*) achieved a superior quality, as did the metal fittings made for architectural purposes. Metalwork was usually a family affair; trade secrets as well as proficiency in forging and casting were handed down from generation to generation.

Twentieth-century technology and methods of mass production threatened the continuity of family industries, and the skills of the craftsmen were gradually dying out. Although some earlier legal enactments had occurred to protect Japan's cultural heritage, it was not until 1950 that these were unified and brought under "The Law for Protection of Cultural Properties." Metal art was registered an Important Intangible Cultural Property in 1955. The protected areas in the field of metal design include metal casting, hammering metal, metal carving and surface treatments, such as gilding, coloring and polishing (pp.31-32). The best known and most respected artists in each aspect of metalwork were designated "Living National Treasures"; they receive an annual subsidy and the "responsibility for the refinements of techniques and the education of successors" (p.32).[2]

The broad scope of metal art is represented in the pieces brought together in *Kyoto Metal: an Exhibition of Contemporary Japanese Art Metalwork.* The exhibition opened on March 4, 1983 at North Texas State University, which sponsored the assembly of examples of Kyoto metal art. The concept for the exhibition was formed in 1979 when Harlan W. Butt, a metalsmith and faculty member of the department of art at NTSU, visited Japan on a fellowship from the National Endowment for the Arts. His contacts with Kyoto artists in metal stimulated the idea of introducing Japanese metalwork, which has been known in this country primarily through the beauty and historical importance of swords and sword ornaments, to

American craftsmen and the public. The plans for the exhibition were warmly supported by the Kyoto Metalworkers Cooperative Association, the City of Kyoto, the Texas Commission on the Arts, the National Endowment for the Arts and by North Texas State University at Denton. Three limitations were imposed to give unity to the 50 objects by 43 living craftsmen which were chosen for display in the United States: the medium was to be metal; the maximum dimension of a piece was not to exceed 60 cm; the metalworkers were to be residents of Kyoto.

A first impression of the metalwork in the exhibition was triggered by the exquisite delicacy, the cool sheen of surfaces and the refinement of forms. Admirers of metalwork in this country are conditioned to expect High-Tech slickness or found objects imbedded in metal, the influences of Minimalism, a massive boldness suggested by the sculptor's use of the welding torch and sculptural overtones even in functional designs. In the objects by the Kyoto artists form is determined by function; a tea kettle is a tea kettle, a vase is a vase; a bowl is a bowl. There is another unexpected element. Western enthusiasm for Japanese art has often developed around an appreciation for the subdued beauty of the utensils of the tea ceremony and for the "folk-art" pottery style such as that embodied in the ceramics of the late Shōji Hamada. Such humble, often irregular, pieces are linked with that spirit of poverty, austerity and inevitability which is called *shibusa.*[3] Many of the metal designs by the Kyoto craftsmen direct attention to symmetrical perfection, glowing patinas, the enamel-like colors with their changing iridescenses and to feats of technical virtuosity. There are, however, in the exhibition some reticent pieces with tranquil monochromatic values which are not "captive to perfection." There is, for example, a handsome cast iron tea kettle by Jirōbe Takagi, a fourth generation ironworker. Not content to learn only the process of casting, Takagi studied under three painters and spent two years of apprenticeship under the direction of a metalsmith in order to learn hammering and engraving techniques. It is the influence of the masters of brush drawing that appears to have lead Takagi to use painterly touches to enliven the sides of his kettles. On one side of the tea kettle, in the Kyoto exhibit, there is a motif of grass blades which recalls the



Opposite Hideaki Yamamoto, *Flower Vase,* cast bronze with inlaid silver, copper, shakudo, shibuichi, 28 x 8 x 8 cm, 2250 g. **Top** Ichiro Kawahito, *Sword Guards,* gold damascene on iron, .5 x 8 x 7.5 cm each, 100 g. **Above** Yoriaki Nakamura, *Vase,* raised brass with shibuichi inlay, 19 x 22 x 22 cm, 1200 g. Photos: Susan Touchstone

Top Jirobe Takagi, *Kettle,* cast iron, 23 x 17 x 17 cm, 2400 g. **Right** Shinji Yamamoto, *Mirror,* cast bronze with mercury amalgam, h. 3 cm, d. 27 cm 3000 g. Photos: Susan Touchstone. **Opposite** Yasuyoshi Hasegawa, *Vase,* cast bronze using the lost was process, 37 x 13 x 14 cm, 3760 g

bounding strokes which plunge over Shôji Hamada's pottery. On the other side, Takagi placed two "sweet fish" slipping through the water. During the finishing process, the kettle was roasted over a charcoal fire for several hours and coated with lacquer and *ohaguro,* a patina of black iron powder and vinegar. In contrast to the textured darkness of the kettle, the lid is a smoothly finished reddish brown; to it a silver knob was added.

Another restrained and unobtrusive piece is the product of the fine craftsmanship of Yoriaki Nakamura, who also belongs to the fourth generation of a metalcrafting family. The vase is raised of brass with inlaid lines of *shibuichi,* an alloy of 25% silver and 75% copper.

Traditionalism is a constant factor in the metal art of the Kyoto craftsmen. Yasuyoshi Hasegawa is known for his Buddhist objects. He works directly in wax; the final product is cast in bronze using the "lost wax" method. He is represented in this exhibition by a bronze vase ornamented with raised coils, a *Higo-zôgan* spiral design called *uzu.* A respect for tradition is thoroughly absorbed in the sword guards (*tsuba*) made from iron with the ornament in damascene using gold exhibited by Ichiro Kawahito. Mr. Kawahito manages the Kawahito Zogan Company which has been in business for more than a century.

The making of bronze mirrors is a specialty of Shinji Yamamoto and his sons. At the age of 15, Shinji Yamamoto began to receive instruction in mirrormaking from his father. One of Yamamoto's traditional mirrors is shown here. It is of cast bronze with mercury amalgum. The design on the back is called the raft and chrysanthemum pattern. Nine years ago, the designs in metal by Shinji Yamamoto were designated Intangible Cultural Properties by the Japanese government. Mr. Yamamoto's son, Fujio, recreated for the exhibition an old Japanese mirror at Nara; its origin was carefully researched by Fujio and a professor at the University of Kyoto.

Today, in Japan, as in the past centuries, the skills of working with metal are transmitted from one generation to another by means of the apprenticeship system. In many instances, a young man will learn the craft under the guidance and supervision of his father or an older member of the family; others search out master

craftsmen with established reputations. Harlan Butt observes that of the artists of the Kyoto group only three or four are first-generation metal workers. Many are fourth- or fifth-generation members of families of metal craftsmen; while one, Masahiko Satomura, belongs to the fourteenth generation of metal artists. Study with a master may last from one to 12 years, or even longer. Shumei Tanaka is a famous Kyoto teacher; at least seven of his students are included in the Kyoto exhibit. Tanaka arranges for an apprentice to spend five years living in his home and helping him with his work in the studio. In addition to room and board, the student receives a small salary; in return, the apprentice must agree to remain for the designated time and he must promise not to marry. Throughout his years of service, the apprentice is required to work on the designs of his employer; however, he is given access to the studio after regular hours. Working until late at night, the student is free to develop his own designs. When the apprenticeship comes to an end, the newly trained craftsman may move back to his own home and open a shop of his own, or he may wish to continue to work for the master metal artist.

Another aspect of the metalwork of Japan which is foreign to the ideas held by students who graduate from universities in the United States is the Japanese willingness to carry on cooperative efforts with other craftsmen. Unlike his American counterpart, who will work on a piece from beginning to end, a Japanese artist may collaborate with a number of others in bringing a metal piece to completion. One craftsman may take the responsibility for casting the design, another may engrave or inlay the surface, while a third may be chosen to color the object with chemical patinas. Collaboration allows craftsmen to keep family trade secrets secure, at the same time, permitting others to profit by a particular expertise. A sense of community is also fostered among those who share similar interests. The spirit of cooperation is less difficult for people who do not make a virtue of an intense individualism. Japanese craftsmen have always held the belief that the functional values and esthetic character of an object transcend the identity of the person who made it.

Traditionalism and an indebtedness to the past do not go unchallenged in the Kyoto Exhibition. Hideaki Yamamoto's cast brass vase, with inlays of silver, copper, *shakudô,* and *shibuichi,* expresses the dignity of the past and contains an awareness of twentieth-century design. At first glance it could be a ceramic piece until the finesse of folded metal which separates the upper square from the lower rectangle becomes apparent. From some angles, the shadows seem to sever the upper portion of the vase from the bottom. Eiji Yamamoto, a son of Shinji, exhibits a mirror which is given a new sense of dynamics by its maker. The cast bronze mirror is referred to as a "magic mirror." The mirror, which has bold calligraphic figures on the back, is held on curving brass brackets supported on a rough oblong tile. Opposite the mirror's face a second circle with a light cream-colored surface is mounted. Although the light was not properly channeled in the museum, Mr. Yamamoto, who was present at the opening of the exhibit, explained that the mirror holds the Japanese character for long life hidden in its interior. This can only be seen when the light is reflected off the mirrored surface onto the panel at the end of the tile mounting. The design is both sculptural and, in a sense, kinetic as the reaction to light brings about varied reflective qualities.

The catalog for the exhibition is harmonious and suitable in design, but the black-and-white-photographs cannot convey either the scale of the metalwork or the nuances of color which exist in the patinas of the metal surfaces.

The significance of "Kyoto Metal" lies in the link it establishes between craftsmen and the public of the East and West, and the opportunities that it opens for further exchanges between the two cultures. But it has an even deeper significance. An awareness of the apprenticeship system by which Japanese metalworkers learn their profession becomes a part of the dialogue begun by Mark Baldridge's editorial, in the fall 1982 issue of *Metalsmith,* in which he questioned the ability of university-trained metal craftsmen to apply their skills successfully in the marketplace. In the foreword to the catalog on "Kyoto Metal," Harlan Butt observed, "An interesting fact about the craftsmen in this exhibition is that they all support themselves by the creation of handmade metal objects." ■

This exhibit was reviewed at North Texas State University, Denton, Texas, where it was shown from March 5-31, 1983. It will travel across the United States in the next year, as follows: *The University of Michigan,* Ann Arbor, MI, May 14-June 20; *The National Ornamental Metal Museum,* Memphis, TN, June 30-August 10; *Southern Illinois University,* Carbondale, IL, August 17-September 18; *Parsons School of Design,* New York, NY, September 26-October 26; *Japanese American Cultural and Community Center,* Los Angeles, CA, November 7-December 10; *Museum of History and Industry,* Seattle, WA, January 18-March 11, 1984.

An illustrated catalog is available from: Harlan Butt, Department of Art, North Texas State University, Denton, TX 76203-5098 or at exhibition locations.

Notes

1. Masataka Ogawa, *The Enduring Crafts of Japan* (New York/Tokyo: Walker/Weatherhill, 1968) "Introduction," p. ix
2. "Metalwork," *Living National Treasures of Japan,* Jan Fontein, ed. (Boston: Museum of Fine Arts, 1982), p. 29-32
3. Sōetsu Yanagi, *The Unknown Craftsman* (Tokyo: Kodansha International Ltd., 1981), pp. 148-149

Exhibition Reviews

Sculptural Jewelry '82
Contemporary Artisans Gallery, San Francisco
October 27–November 20, 1982
by Britta Schömer-Worthen

Under the theme "Sculptural Jewelry '82" Contemporary Artisans showed the diverse work of eight nationally known jewelers. Most outstanding was the jewelry by Rachelle Thiewes: The smooth, mostly satin-finished surfaces, curved and sometimes sharply folded, indicated her interest in the way light plays on her metalwork. On exhibit were three distinctive styles: Masterfully engineered bracelets, handcuffs and neckpieces in silver with gold and copper were defined by their clear and geometric designs and substantial size. "Shutter" earrings and bracelets incorporated woven strips of silver into elegant design. Her newest work consisted of cut, slightly conical silver discs, pierced with several gold needles to form gracious pins and earrings.

Michel Roysten's compositions of lines and delineated space demonstrated her skillful metal forging. In her gold and silver earrings and barrettes fine lines grew into wide lines in gentle, sometimes unexpected curves. The shape and color of selected transparent stones added another focal point to her neckpieces, hair pins and earrings.

The jewelry of Alan Revere looked refined, elegant and modern, sometimes futuristic. His gold rings with inlaid stones in gently rounded geometric shapes demonstrated excellent workmanship. Bracelets and earrings in niobium and gold stood out for their vivid, pleasant color.

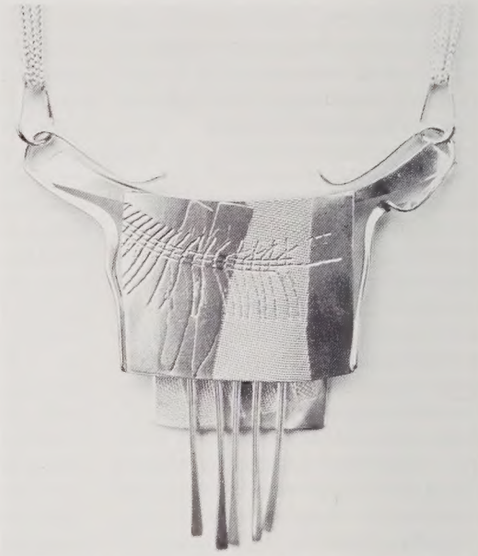
John Heller's cast jewelry is obviously conceived three dimensionally. Silver, overlaid gold and gemstones like rose quartz and opal are combined in his brooches and rings into miniature sculptures which are pleasing to the eye from every direction.

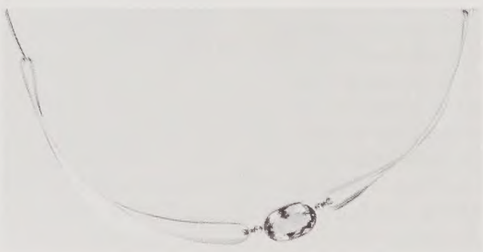
In Ann Grundler's "silverprint" jewelry the surface has become a central design element. Imprinted textures range from delicate, feather-like webs to rougher veining which she sets in contrast with each other or with gently curving forged lines. Her necklace clasps are successful examples of integrated design. Some of the neckpieces focus on handcarved stones of renowned German stonecutter Bernd Munsteiner.

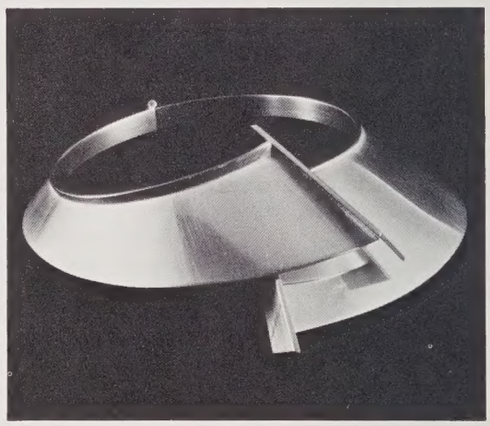
Surface texture is also a basic design element in the jewelry of Micki Lippe. She overheats metal to achieve a reticulated surface and contrasts silver with gold and pearls. I liked the creative use of hinges in her earrings.

Pamela Allman showed an impressive table sculpture with two removable pins. Her earrings and pendants in reticulated vermeil with silver and pearls left me a little disappointed, probably because I had expected to see some of her outstanding riveted jewelry pieces and objects in silver and wood.

Douglas Steakley's holloware containers represented sculptural work by a jeweler. The vessels in asymmetric forms with irregular highly planished or roughly textured surfaces had an organic quality which was enhanced by the vibrant colors of heat-treated copper.







Top left Douglas Steakley, *Containers,* copper with 14k gold. Photo: Lee Hocker. **Top right** Ann Grundler, *Necklace,* sterling and 14k gold, 2 x 2", 1981. **Center left** Michel Royston, *Necklace,* 14k gold and sterling with blue topaz. Photo: Tom Wachs. **Center right** Rachelle Thiewes, *Bracelet Form 82-1,* silver. **Above right** Alan Revere, *Accordian Bracelet,* 14k gold, 1982. **Above left** John Heller, *Necklace,* 14k gold with matrix opal and fresh water pearls

Susan Tamulevich Jewelry
Plum Gallery, Kensington, Maryland
May 14–June 8, 1982
by Komelia Hongja Okim

Susan Tamulevich's jewelry exhibition at Plum Gallery revealed her special artistic quality and sensitivity. Her pieces included some large but light, movable and fashion-oriented body ornaments.

This exhibition exemplified her research on the distinct character of each metal by testing its reaction to stress, fusion and reflection to light with gold, lead and other alloys. Through these she emphasized and suggested her body jewelry of necklaces, bracelets and earrings in cool, luscious and fluid fashion. Her works represent three seasons—winter, summer and fall: Winter was expressed in white, airy qualities of frosted, white cherry blossomlike modules of earrings and shoulder pieces. Summer carried cool, serene color gradations from white to blues and soft pinks as well as maroon colors of jewels and silver constructions. Fall was expressed in dark and light colors as well as surface embellishments of different brushstrokes of yellow and/or white gold paint on copper and sterling silver collages.

Throughout the exhibition, the main emphasis was on gold painting, on rhythmic quality that balances the mass, line and space with white and yellow coloring of the gold brush strokes against the tinted background or space. Susan Tamulevich's works have a sense of fluidity and organic cohesiveness that works well in three dimensions.

Fritz Maierhofer
Galerie am Graben, Vienna, Austria
by Verena Formanek and Veronika Schwarzinger
translated by Barbara Tengler-Ventrello

Fritz Maierhofer, an Austrian artist born in Vienna in 1941, has been well known to the international jewelry scene for many years. To celebrate its tenth anniversary, Galerie am Graben honored him with a one-man show.

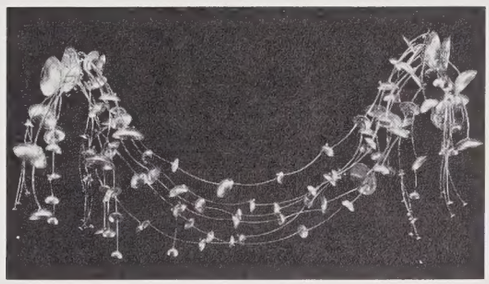
Maierhofer was educated as a traditional goldsmith, and because of this he learned his craft to perfection. However, he wanted to design contemporary jewelry and in the late 1960s found that Austria was not receptive enough to his ideas. So he went to London. While working there he was inspired by the jewelry of other artists to develop his own acrylic works. This relinquishing of traditional forms and materials was an important step for him. At the end of the 60s he made a radical commitment to the expression of that time. He devoted himself to the possibilities of materials, such as acrylic, as well as to bold colors, basing his designs on three-dimensional geometric shapes. Later he reduced his concept of jewelry to more graphic designs on brooches and pendants, using gold and silver in a non-traditional sense.

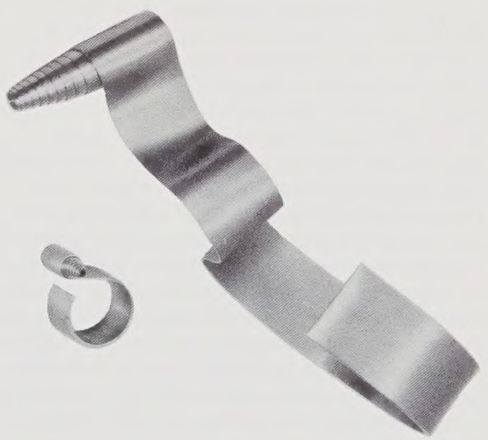
Maierhofer's current work combines rolled tin with gold. Tin is a material with a certain flexibility which can be easily rolled (that is, an earring can be rolled longer or shorter), allowing the wearer to play with it. But this possibility is limited in that the tin must be sensitively handled. Tin is rarely used in jewelry making, and Maierhofer is one of the few who have mastered it in an interesting way. He was perhaps inspired by the tin symposium at the Hochschule für angewandte Kunst (School of Applied Arts), held in Vienna in the summer of 1980.

However, it seems that Maierhofer's concept has not yet been understood. Because people are used to seeing metal as a stiff material, they don't try to explore the flexible character of the tin. Maierhofer wants the pieces to be used, touched, changed and worn out, because they are not made to last forever.

In Maierhofer's present work the radical moment is no longer very strong. Rather than visual provocation he uses more sensitive colors and reduced shapes, reflecting his life in and with nature. (He now lives with his family in a farmhouse called Crublestone in the Austrian countryside.)

A catalog from this show with an overview of Maierhofer's work is available from Galerie am Graben, Graben 5 Vienna 1, Austria.





Top Susan Tamulevich, *Ophelia Series Necklace 5,* sterling silver. **Center** *Gold-painted Beads,* 14k white gold on black oxidized copper. Photo: Tom Wolff. **Above** Fritz Maierhofer, *Ring and Bracelet,* tin and gold

Irish Silver
Traveling exhibition 1982-1984

For the first time, a selection of 80 important silver objects for the National Museum of Ireland in Dublin will visit the United States for a national tour organized by the Smithsonian Institution Traveling Exhibition Service (SITES).

The Keeper of Metalwork at the National Museum of Ireland, John Teahan, and SITES Exhibition Coordinator, Donald McClelland, have selected a representative cross-section of silver objects from the Irish national collection for this exhibition. The mostly domestic silver objects made from the 17th through the 19th centuries constitute the exhibition. The earliest piece in the show is an engraved chalice of elegant proportions and is dated 1612, while the latest is a tea and coffee set decorated in the Celtic revival style, made around 1870. American collectors and silver enthusiasts will be able to view pieces made in Dublin, the center of silver manufacture for nearly three centuries, as well as works from Cork, Limerick and Galway.

The term "Irish Silver" usually refers to fine silver objects manufactured in Ireland after 1500 AD. For nearly 4000 years, goldsmiths and silversmiths have been at work in Ireland, but not until the 17th century did craftsmen employ their technical expertise and acute esthetic judgment to produce silver wares for the Irish kitchen and drawing room.

From the earliest times, gold was originally preferred as a precious metal in Ireland. Artisans fashioned personal ornaments such as earrings, collars and necklets for Ireland's first kings and chieftains. By 500 AD when Christianity was introduced to Ireland, craftsmen were working with the mixed metals copper, gold and silver, creating such renowned pieces as the Ardagh Chalice and Tara brooch, both made around 750 AD. By 1550 craftsmen were beginning to discover the joys of working with pure silver which, like gold, is a malleable and ductile metal. Many of these early silver objects were made wholly for ecclesiastical use and a number are included in this exhibition. In 1637, the tides turned in Ireland for manufacturers of gold and silver wares, who suddenly found their craft controlled by law. That year the Dublin Goldsmiths Company was established by a charter of King Charles I as the sole assay authority in Ireland. Even today this Company continues to monitor production and sale of gold and silver objects.

Every maker in Ireland was required after 1637 to stamp his or her wares with a personal mark, usually initials, then submit them to the Company for assay. If the piece met the Company's standards of fineness, it was hardmarked, thus made ready for sale. Dublin was the center of silver manufacture from the 17th century to the present, but wares of exceptional quality as found in this exhibition were also made in Cork, Galway and Limerick.

The exhibition covers a period (1600-1850) when styles in Irish silver were largely determined by English and other European influences. However, distinctively Irish decorative features and forms can be observed on most pieces in the exhibition. The chased, unpretentious forms are typical of the earlier period while decorative features and forms are typical of the earlier period while decorative scenes of rural pastimes and the out-of-doors were common themes in engraved design.

From about the middle of the 19th century, Ireland experienced a growing interest in her own history and archaeology. The Celtic revival movement developed during this period, based on ancient metal objects and illuminated manuscripts. The craftsmen studied and copied these ancient designs of stylized beasts and interlaced borders, which can be seen in a four-piece tea set made in Dublin around 1870.

A major catalog accompanies the exhibition, and includes an essay by John Teahan and an introduction by Donald McClelland. Copies are available through museums on the exhibition's tour and by mail, from SITES. For individual mail orders, make checks payabale to "Smithsonian Institution" in the amount of $10 per copy plus $2.50 per order for postage and handling, and mail to: Irish Silver, Smithsonian Institution Traveling Exhibition Service, P.O. Box 1949, Washington, D.C. 20013. Following is the traveling schedule for the exhibition:

1983	**June 18 - July 17** Fraunces Tavern Museum New York, New York
	August 6 - September 18 Columbus Museum of Art Columbus, Ohio
	October 10 - November 20 Mary and Leigh Block Gallery Northwestern University Evanston, Illinois
1983-84	**December 10 - January 8** Cincinnati Art Museum Eden Park Cincinnati, Ohio
	January 28 - April 15 The Bowers Museum Santa Ana, California

Top *Silver Hunt Trophy,* inscription "Given by the Kildare Hunt on Tuesday the 15th of September 1757, and won by Sir Ralph Gore's Grey Horse SPOT," National Museum of Ireland, Dublin. **Center** *Candlestick,* silver, 1745, National Museum of Ireland, Dublin. **Above** *Hot Water or Tea Urn,* by James Henzel, silver, 1812, National Museum of Ireland, Dublin. Photos: Courtesy of SITES

Opinion

Ancient Inspirations: Contemporary Interpretations

When I first heard about the craft show "Ancient Inspirations/Contemporary Interpretations," I was impressed. The press information packet that I was sent by *Metalsmith,* when asked to review this exhibition, struck me as highly professional, obviously put together by an experienced museum staff. The information imparted by this packet made the show sound first class. In a well-worded press release it was announced that "Roslyn Tunis, Curator of Art at Roberson Center (for the Arts and Sciences in Binghamton, NY) has organized the exhibition. Ms. Tunis has specialized in ancient, folk and primitive art, as well as contemporary crafts. The works of 75 leading New York State artists/craftsmen—over 150 objects in clay, metal, fiber, wood, glass and mixed media—will illustrate the way in which ancient art has inspired the contemporary craftsmen." This show, which opened August 2, 1982 at Roberson Center, would be traveling to several institutions through 1984, including The New York State Museum in Albany, Skidmore College, The Parsons School of Design, Alfred University and the Mississippi Museum of Art (Los Angeles Craft and Folk Art Museum has recently been added to the list). Excerpts from the accompanying catalog were scholarly and the three black-and-white photos were of very high quality. The list of exhibitors included such metalsmithing luminaries as Robert Ebendorf, Kurt Matzdorf and Mary Ann Scher. Sounds Impressive, doesn't it?

Unfortunately, the reality is quite different. This show, as so often happens in the crafts world, is plagued by a lack of professionalism—from the manager of public relations at Roberson Center to the curator, the host gallery in Alfred (where I saw the show) and the New York State Council on the Arts, whose generous support made this show possible. In every aspect of this show each individual seems to have done his or her initial job quite well, then passed the work along to someone else and abandoned it. No one seems concerned with maintaining the integrity of the exhibition. No one seems to care what happens to this show. Although Roberson Center and the other institutions involved in this exhibition are not the largest and most influential museums in this country, they still have an obligation to maintain professional standards. Anything less is unacceptable. None of the problems I encountered require a large budget to correct. More caring, more attention to detail and more concern with maintaining professional standards is all that is needed.

Because the exact dates that the show would travel were not given in the press release, I wrote to Midge Hamlin, the manager of public relations at Roberson. Between August and December it took two letters and finally a phone call to Roberson to obtain this information. I was never informed that the entire show would not be traveling. It was as though Hamlin sent out her press releases and then forgot about the show.

Finally after months of anticipation, the day arrived for me to view the show in the Fosdick/Nelson Gallery at Alfred University. I am dismayed to report that this exhibition, as seen at Alfred, left me not only disappointed, but outraged. Of the original 29 pieces of metalwork listed in the catalog, only four were on display. Initially the director of the gallery, Dick Kavesh, an art history professor specializing in 19th-century art, explained to me that he had to eliminate the metalwork for security reasons. He didn't have enough plexiglass cases to protect the work. When I asked if I might see the undisplayed pieces, I was told that they were elaborately packed away and impossible to show. In our ensuing conversation about the exhibition, he confessed that he felt uncomfortable with the theme of the show and preferred to think of it as a general craft exhibition. He felt that dividing the work into four catagories: metaphors, architectonics, vessels and ceremony, as Roslyn Tunis had done, was contrived. When I suggested to him that plexiglass covers were not that hard to come by and that maybe there was another reason for eliminating the metalwork, he readily admitted that he found the pieces "fussy." To him they were more concerned with "function than with art." Although security was his primary concern, he conceded that he could have found ways to display the work if he had felt it was an important asset to the show. As I see it, the issue is not whether his assessment of the show was correct, but whether a gallery director has the right to significantly alter a traveling exhibition. I find this to be both unprofessional and unacceptable.

If this were the only problem with the show, it would have been bad enough. However, there was more. Although a very elaborate catalog (priced at $11) had been published with this show, none was available at Alfred. Because the entire show was not displayed, certain labels proved erroneous, if not farcical, particularly in cases such as Grace Knowlton's *Four Clay Spheres* when only three were present. I later learned that large wall plaque photographs that were to accompany the show, which Roslyn Tunis hoped would help convey the theme, were missing.

How could this have happened? In search of an answer, I called Tunis, the curator of the show. She began the conversation by apologizing profusely for the lack of metalwork in Alfred, but said it was for security reasons. When once again I suggested that there is no current world shortage of plexiglass cases, she agreed, adding that she could have lent some from Roberson Center. She was dismayed that the integrity of the show had been destroyed. Religious art comprised a significant section of the exhibition according to the catalog (Dick Kavesh was kind enough to lend me his copy), yet was totally missing in Alfred. Ironically, she said that Mr. Kavesh had been very enthusiastic about the show when he first inquired about exhibiting it in his gallery. She was unaware that there were no catalogs or wall plaques in Alfred, both of which she said she had sent, and thanked me for calling to let her know. She assured me that as the show continues to travel at least one piece from each artist will be included at all locations.

Why she didn't do anything to correct the situation, I don't know. Was it poor judgement, lack of control over her own show, lack of caring or lack of professionalism? It is obvious from the catalog, if not from the show, that she had put a tremendous amount of work into this exhibition. She seemed to have only the best of intentions in putting it together, yet I was left with the distinct impression that when she packed it up and sent it off, she abandoned it.

Curious to explore the artist's point of view, I next called on some of New York's most prominent metalsmiths for their opinions. Kurt Matzdorf was shocked to learn that his work was not being shown in Alfred. Although Tunis assured me that she had written a letter to each of the artists whose work was not displayed, Matzdorf had only skimmed the letter, assuming the show was in competent hands. Not surprisingly, he felt that Dick Kavesh had no right to pick and choose what to include in the exhibition. He was not asked to jury the show, merely to display it. Matzdorf said that he, Hana Geber, Chayat and Robert Ebendorf had all exhibited both nationally and internationally and he was irked that Alfred could be so arrogant as to reject their work.

Albert Paley, who Roslyn Tunis told me was not included because he had prior commitments, was not surprised when I informed him of the status of the show. He said he originally feared a lack of professionalism and scholarship might invade this show as it does so many craft exhibitions. He was skeptical of the theme "Ancient Inspirations/Contemporary Interpretations" because he sees all art as influenced by the past. No artist can ignore historical precedence. When Tunis found one of his tables inappropriate for the exhibition on the grounds that it did not fit the theme, he decided not to become involved. Therefore, when she asked him if he could create something especially for the exhibition, he pleaded prior commitments.

Paley's statements led me to question the whole concept of this show. Does this exhibition really contain the work of New York's "leading" artists or were some exceptional pieces not included because they didn't conveniently fit into Tunis's four categories? On what basis did she decide what objects had ancient inspiration? And if ancient inspirations were her overriding concern, how can she justify including a piece such as Tom Markusen's music stand (one of the four metal pieces displayed in Alfred) when he himself states in the catalog that his inspiration was Art Nouveau? Maybe these questions can be answered by someone who saw the show in its entirety.

According to Martha Strodel, crafts coordinator for the New York State Council on the Arts, it was partially due to the theme that Roslyn Tunis and Roberson Center were awarded the grant that made this show possible. Strodel was unaware that the original intent of the show had been greatly altered at Alfred. The Council had awarded the grant for the production of the show and the catalog. They have no way of ensuring that professional standards are maintained in their grant projects beyond the specific area they support. What form a show takes when it travels is not their concern.

Ultimately, whose responsibility is this fiasco? It seems that almost everyone who had a part in this exhibition is somehow to blame. These situations can only be avoided in the future if individuals are willing to take the responsibility and insist on professionalism. Because no one else is willing to do this, artists can protect themselves only by emerging from their trusting naivete and demanding that their work be treated with respect. They must somehow become more aware of what happens when their work is sent to an exhibition and protest loudly when they or their work is treated poorly. No matter how unpopular this makes the artist and how much trouble it is, it must be done, because, unfortunately, no one else is doing it for them. I am not saying that this is how it should be, only the reality.

And finally, is it really all that important what happens to a craft show in the tiny town of Alfred, New York? Obviously, I think the answer is yes. Primarily, there are the principles involved. Second, this show, as seen at Alfred, made metalsmithing out to be an extremely weak craft. If the director of a large museum, considering doing a craft show, saw the show in Alfred, he or she would never include metalsmithing and, from the lack of professionalism in this exhibition, would probably shy away from the whole crafts field. Although this show may have been paved with good intentions, it did a great disservice to the crafts, especially metalsmithing.
—Deborah Norton

Southwest Indian Silver from the Doneghy Collection

by Elizabeth Skidmore Sasser

Above (inner) *Squash Blossom Necklace,* double carinated wire naja with stamped and repoussé decoration at the terminals and center, about 1950. **(Outer)** *Squash Blossom Necklace,* cast double naja with two sets of hands as terminals, 1930s

At a time when the country is still reeling from the vogue for Indian jewelry displayed around the necks of rock stars, like the chains of the Lord Mayor, and on the blue jean shirts of admirers of "the Santa Fe look," it is refreshing to be offered the opportunity to see the Virginia Doneghy Collection of Southwest Indian Silver. The handsomely displayed pieces represent a half-century of purchases made by Virginia Doneghy, an intrepid librarian from Minneapolis, during her yearly vacations in New Mexico and Arizona. Describing her first encounter with Indian jewelry, Doneghy recalled an early visit to Santa Fe. The bus on which she was riding stopped in front of the gift shop window of La Fonda Hotel; there behind the glass she caught sight of a silver necklace. "To me," she said, it was "the most beautiful necklace I had ever seen." After fiesta ended, she returned to the shop; the necklace was still there just "as beautiful on close inspection as it had been from the bus" (*Southwest Indian Silver from the Doneghy Collection,* ed. Louise Lincoln, p.182). This was the beginning of a lifelong love affair which focused upon the work of the Navajo silversmiths.

The silver collection consists of 1200 pieces: concha belts; bracelets; *ketohs,* bow guards of silver attached to leather; rings; pouches decorated with silver; pins; earrings; buttons; beads; squash blossom necklaces; even a headstall for a horse. Chosen by Doneghy with an unwavering taste for excellence, the Indian jewelry forms an important visual document which contributes insights into the technical changes and stylistic developments that have occurred in the century between 1870 and 1970.

The earliest pieces acquired by Virginia Doneghy belong to the last three decades of the nineteenth century. The craft of working metal was probably taught to the Navajo, in the 1850s, by Hispanic blacksmiths; but it is likely that the Navajo did not work with silver in a serious way until after their return to their homeland from the terrible years of confinement at Fort Sumner—a captivity which ended in 1868. The fact that the Indians were allowed access to iron and brass and to copper wire stockpiled at the Fort, and also to the forges seems to have played a role in the rapid development of silversmithing in the 1870s and 1880s, decades that became known as the "classic era" of Navajo silver jewelry making (Margery Bedinger, *Indian Silver,* p.41).

At first, the silver used by the Navajo came from U.S. coins. When this source was banned in 1890, by an act making it illegal to deface the currency of the United States, Mexican silver was substituted. The first ornaments depended upon annealing and hammering the silver. Stamped designs were struck on the metal as an added decoration. The Navajo borrowed the idea of stamping patterns on their silver work from the Mexican *plateros,* itinerant silversmiths moving along the trails of the Southwest. The first markings made by the Navajo resulted from striking a chisel against the surface of the silver or by using a small metal pipe to indent a series of crescent shapes. By the 1870s, silver casting was practiced by the Indian smiths. If an object required several silver coins, the smith would melt the necessary amount of metal and pour it into an ingot, roughly approximating the desired form. When the silver cooled, the ingot was hammered into a thin sheet, on an anvil often made from a section of railroad track, and then trimmed. A more direct method of casting was accomplished with a two-part mold carved from sandstone found on the Navajo Reservation. This method continues to be used for the bold, openwork designs which are among the finest products of the Navajo and Pueblo craftsmen. During the last part of the nineteenth century, the techniques of *appliqué* and *repoussé* were perfected. This was also the period in which the Navajo smiths learned how to set stones in silver. The stone was secured to the metal by a tightly gripping band of silver; the resulting bezel was soldered to a bracelet, ring or other piece of silverwork. Unlike the Zunis, who specialized in lapidary skills and allowed their use of turquoise to dominate the silver, the Navajo never permitted stones to diminish the contributions of the silversmiths or the turquoise to detract from the smooth sheen and sculptured quality of the metal. When selecting a stone for a setting, the Navajo preferred a large single turquoise cut in an oval, a circle or in a rectilinear shape. A cluster of stones might be arranged around a central stone; for a narrow bracelet, turquoise was repeated about the band.

Compositions developed a firm symmetry, varied by linear repetitions. An admiration for massiveness and balance characterized the goals of the Navajo craftsmen.

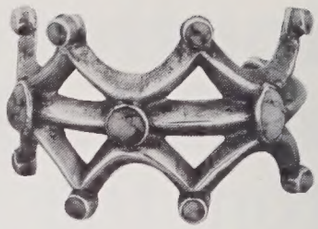
Navajo jewelry made to be worn by Indian family members had nothing in common with the "made-on-the-reservation" work commissioned for the purpose of attracting tourists who flocked west by rail and auto in the 1920s and 1930s. Light-weight silver with badly matched turquoise and stamped with so-called "Indian symbols," thunderbirds, owls, swastikas and crossed arrows, satisfied the desire for souvenirs. The Navajo looked at such symbols with disgust. Figures associated with religious ritual or the traditional sandpaintings that accompanied the healing chants were too sacred to be worn as ornaments.

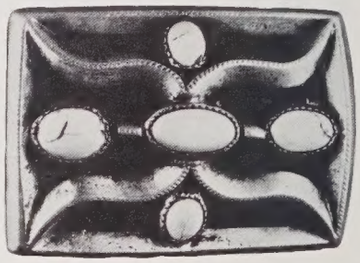
The popular and elegant squash blossom necklace became a special prey of the invented interpretations of wily tradesmen, although its true origins were far more fascinating than the hints of erotic meanings. The necklace consists of silver beads alternating with the blossoms, whose long shanks are pierced for stringing and attached to a round bead, at the end of which pieces of silver are soldered and curved outward like petals. Although there is a resemblance to the flowers of the squash plant, the motif is more closely related to the pomegranate, which flourished in the south of Spain and was grafted onto the coat-of-arms of the city of Granada. Beads with the pomegranate motif were brought to the New World by the Spanish; such beads were often sewn on the jackets and trousers of the Mexicans (p.83). The third portion of the necklace is a silver crescent, or *naja,* suspended at the center of the string of beads and squash blossoms. Like the pomegranate design, the *naja* also made its way across the Atlantic from Spain; but its first emergence was much earlier, perhaps, in the dim light of prehistoric caves. Cave dwellers are thought to have fastened the tusks of boars together in order to assume for themselves the animals' strength and ferocity. In Rome, the crescent appeared on horses' bridles as a protection against evil. A Navajo named Long Moustache is quoted by Bedinger as explaining that the *naja* was placed at the center of the headstalls of Indian ponies to give them greater speed; he added that the crescent probably was suggested by "observing the moon scudding swiftly through the clouds" (p.79). This is, doubtless, more fanciful than accurate. The tips of the *naja* terminate in plain circles, turquoise stones or tiny hands. The hands point directly to Islam and to the Moors who carried the *naja* with them when they crossed the straits of Gibralter into Spain in the eighth century A.D. The hands are a reminder of the magical power of the "hand of Fatima" worn as an amulet to counter sorcery and guard against the evil eye. The Navajo often suspended a turquoise within the open circle of the *naja.* Without conscious intent on the part of the silversmith, at the intuitive level, the *naja* gains richness by linking its graceful design with the round hogan, the traditional house of the Navajo, and its only opening, or door, at the east in the circle. The central stone recalls the location of the hearthfire at the heart of the home. The *naja* is also a reminder of the open-ended rainbow, or mirage, placed protectively around many of the sandpaintings which, at the time of a chant, are made inside the hogan.

Louise Lincoln finds a correlation between the sacred landscape of the Navajo, bounded by sacred mountains at each of the four points of the compass, with a vertical line representing zenith and nadir rising at the center, and the tendency of the Navajo silversmiths to divide a surface into quadrants with a strongly defined focal point (*Southwest Indian Silver,* p.43). This is particularly apparent in the designs of the *ketohs.* But more than the strands of associative meanings that are present in all aspects of Navajo art and life, it is the spirit of *hózhǫ́* that permeates all things. Although *hózhǫ́* may be translated as beauty, in the context of the Navajo language, its significance is broader, richer, and more subtle than the implications of the English word. *Hózhǫ́* penetrates beneath the visible, outer form of all things, animate and inanimate,, to the state of beauty that lies within. To "walk in beauty" is the correct path through life. *Hózhó* contains the concept of order, balance, stability and accord. Lincoln points out that it is not enough to consider the completed work of art, because the process which brought the work to completion is equally important. From the Navajo perspective, she says, a piece of jewelry "is merely the vehicle whereby beauty, *hózhǫ́,* is transmitted from an artist, who is himself in a state of beauty, to a recipient or audience, who will in some measure be brought into a state of beauty through viewing, wearing or appreciating what the artist has done and made" (pp.40, 41).

It is the state of *hózhǫ́* that Virginia Doneghy must have shared with the silversmiths whose work she bought year after year. She did not deviate from a trust in traditional values and the gentle progression of designs passed from one generation to another. In adopting this criteria, she by-passed some of the new trends developed by Indian jewelry makers in the Southwest; she chose, instead, to build a collection that is remarkable for its devotion to the best of traditional values. In choosing this path, she provided a valuable legacy for all who are interested in studying and contrasting the silver made over a century of technical developments and changes that did not reject the old because it was old, but allowed designs to evolve.

This exhibition, circulated by The Minneapolis Institute of Art, was reviewed at *The Texas Tech University Museum,* Lubbock, Texas, where it was on view from January 15–February 15, 1983. It will travel to *The Natural History Museum of Los Angeles County,* December 7, 1983–February 26, 1984 and to *The Cooper-Hewitt Museum,* New York City, April 17–July 8, 1984.





Above, from top to bottom
Bracelet, cast openwork band; set with round and oval cabochon turquoises; 1910–1920. *Ketoh,* cast openwork mounting on leather band; set with elliptical cabochon turquoises in serrated bezels, stamped decoration, about 1920. *Bracelet,* cast openwork band set with large calcedony, 1930s. *Bracelet,* cast band with pear-shaped turquoises in serrated bezels; stamped decoration, 1930s. *Bracelet,* cast openwork band; set with small, flat, elliptical turquoise, about 1950. Photos: The Minneapolis Institute of Art

Metals for the Metalsmith

Copper Granulation

by Bonnie L. Deutsch and Dr. Earle Ryba

Granulation, a technique used in jewelry and metalwork, is the decorative use of minute metal granules attached to the surface of the same metal, or, in some cases, attached to each other. In attaching the granules to a surface or to each other, the objective is to create a minimally visible, if not invisible, joint.

Traditionally, gold granules are attached to each other or to a gold base, and silver granules are attached to each other or to a silver base. Gold granulation is more prominent than silver in historical jewelry. In contemporary jewelry, granulation is produced in gold and silver, but not in other metals.

Recently, the authors have developed an innovative method of producing granulation in copper. The reasons for using copper are as varied as individual artists. Some are esthetic and some are practical. The color of copper, whether polished or oxidized, has a particular beauty. Since the discovery and use of gold and silver, copper has been relegated to the use of practical objects, while silver and gold were assigned as materials for jewelers and goldsmiths. Nevertheless, during the past 15 years, copper has infiltrated the contemporary metal arts. In 1977, the "Copper, Brass and Bronze" exhibition at the Museum of Art, University of Arizona, directed the attention of artists and critics to the new position of the nonprecious metals, in this case, copper and copper alloys, in the metal arts. With copper, as well as any other nonprecious or precious metals, the more versatile and adaptable it is to metalworking techniques and procedures, the more attractive it will be for use. On a practical basis, both students and artists must contend with the fluctuating and often exorbitant price of the precious metals. Copper is a useful alternative to precious metals especially in cases of larger pieces of metalwork.

The technique for copper granulation to be described evolved directly from the traditional granulation method of surface layer on a metal that has a lower melting temperature than the core of the metal. The advantage of this for granulation is that there is less of a chance of melting down minute granules during attachment than there is with welding. In gold granulation, a layer of copper is diffused into the surface of the gold, creating a gold-copper alloy which has a lower melting temperature than pure gold. Surface alloying in gold has been produced through various methods. From the gold-copper phase diagram (Figure 1), one may observe that the addition

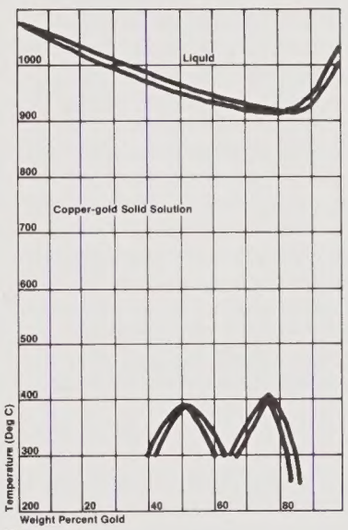


Figure 1

of copper to gold of from 1% to approximately 87% results in an alloy with a lower melting point than pure gold. The alloy of 80% gold and 20% copper has the lowest melting point of any gold-copper alloy.

For the sake of comparison, a technique for gold granulation by surface alloying is as follows:

1) The granules are attached with a mixture of a copper salt in a gum tragacanth solution.

2) As heat is applied, the gum tragacanth carbonizes, creating a reducing atmosphere as it volatilizes. A layer of the reduced copper remains on the surface. Through further heating, the copper diffuses into the surface of the gold.

3) Copper which has diffused into the gold surface creates an alloy which has a lower melting point than pure gold. The melting of this alloy creates the joint (see Figure 1).

After studying the procedure for gold granulation by surface alloying, Bonnie Deutsch, began to look at copper phase diagrams to see if any other metals combined with copper would lower its melting temperature. It was found that several metals, antimony, cadmium and manganese, could serve as surface alloying elements with copper. Experimentation with these combinations was next carried out.

The experimental procedure was quite simple. Samples of copper to be used for the bases with the granules were 20-20-gauge, ½" x ¼" rectangles with a small hole through each piece. The granules were made by cutting bits of wire, placing them on charcoal and applying enough heat to form small spheres. The granules were applied to each piece of copper base with the oxides of the alloying metal in combination with a dilution of Elmer's glue and water. After the granules were dried in place, each test piece was mounted on the tip of a thermocouple wire and placed through a port in the door of a small muffle furnace. As the temperature was elevated, the test piece was removed and visually examined at various intervals to see if a granular joint had formed. When the joint appeared to have occurred, the thermocouple with the sample was removed and air cooled. The granules were tested for adherence by pulling at each one with tweezers. Each successful test piece was labeled according to the granulation method, alloying element and the temperature of the granular joint.

The initial experiments resulted in the conclusion that copper granulation cannot be equated to gold granulation that simply. The first set of experiments in which the samples were placed in the furnace produced a "false" granulation. What appeared to be granular joints were actually oxide coatings on each piece that held the granules in position. As the oxide chipped off, the granules fell off. In actuality, the oxide coating formed a barrier between the granules and the base in all cases.

To prevent oxides from forming, the test pieces, coated with the oxide mixture, were placed in a crucible and then covered with powdered charcoal to provide a reducing atmosphere. Unfortunately, granular joints did not form through this method either.

In a less structured studio experiment, the samples with the oxide mixture were placed on a charcoal block and heated to an orange color (950° C). Upon cooling, there was only a light layer of oxide, which was dissolved away in a hot solution of sulphuric acid and water. The pickled samples were dried and fluxed, then reheated to an orange color on a charcoal block. There was again a light formation of oxide, but some of the granules adhered.

Thus, the following procedure was adopted. Each sample, coated with the oxide mixture, was heated on a charcoal block with a reducing flame to 950°C, then pickled in the solution of hot sulphuric acid and water (Sparex #2 pickling compound ($NaHSO_4$), diluted to approximately 1½ cups per gallon). These were dried and fluxed with boric acid flux. When the flux dried, each sample was placed in a graphite crucible and covered with powdered charcoal. After being placed in the furnace, each piece was examined at various elevating temperatures.

The results of these experiments did not provide adequate granular joints through surface alloying in most cases. The exception was in the case of antimony, which alloyed with the surface of copper. The temperature at which the joint was observed to occur was 1056°C (pure copper melts at 1084.5°C). Copper granulation with an antimony surface alloy can be seen in Figure 2, which shows a magnified section of the granule and base, etched to reveal the grain structure. The illustration shows a definite joint between granules, but not between the granules and base. The joint is questionable, although it withstood the tweezer test. The grain structure of the base is dendritic. At the grain boundaries, a copper-copper antimony eutectoid structure can be seen. The granules appear to be single grained, with a single evident physical joint where the small

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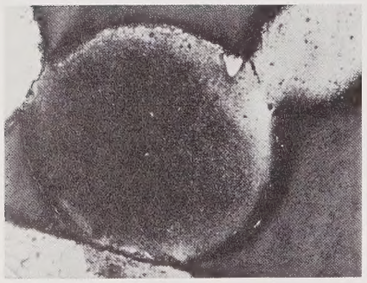

Figure 2

granule (top right) is joined to the larger granule.

An electron microprobe was used to determine the amount of antimony present at various points in the sample. There is a gradual variation of 0.1% antimony at the center of the granule to 0.4% antimony at the granular joint. This illustrates the consistent gradual decrease in composition that is apparently effective in the creation of copper granulation. From this standpoint, one would conclude that the copper granulation technique works well with the combination of copper with the antimony surface alloy.

Having accomplished a reliable copper granulation, Bonnie Deutsch, applied the new technique to a piece of copper metalwork of her creation, the *Icebag Purse* (Figure 3). The bottom of the baglike form is constructed of a copper sheet that was formed in the manner of a typically raised bowl. When the bowl became the desired depth, the sides were folded through hammering on a crimping stake. This copper form bears the resemblance of a heavy satin that has been folded and gathered around a cylindrical

Figure 3

neck. The neck of the icebag is made of 2" diameter 16-gauge copper tube. Decorative holes were drilled into the tube.

The neck of the *Icebag Purse* was the surface on which copper granulation was constructed. The sizes of the granules were varied in order to complement the sizes of the decorative holes drilled into the surface. The granules were applied with a mixture of antimony trioxide, water and Elmer's glue. When the mixture dried on the neck, the neck was heated in an annealing pan on a charcoal block. Heat was applied with a reducing flame until the copper became a glowing orangish color. After the neck was air cooled, it was placed in a bath of hot sulphuric acid. Then it was rinsed, fluxed, dried and placed in a graphite crucible, which was packed with powdered charcoal. It was finally heated in a furnace until the temperature of the object reached slightly above 1056°C (the temperature determined in previous experiments). The granules were joined without any noticeable oxidation of the surface, although the joints did not seem as strong as when silver and gold were used. Some granules did fall off, but most have remained.

Thus, the procedure developed for copper granulation is a transfer of the principles for the traditional method for gold and silver to a new method for copper. Essentially, the procedure for copper granulation may be stated as such:

1) Prepare the surface and granules for attachment. The surface and granules should be pickled in hot sulphuric acid, rinsed in water while being brushed or washed with a cloth. If the surface of attachment needs to be polished, it should be done. After polishing, the copper should be cleaned with ammonia and then rinsed in clean water and dried.

2) The copper granules should then be attached to the surface with a solution of ½ t. H_2O, ¼ t. Elmer's glue and 0.1 antimony trioxide and allowed to dry completely.

3) The surface and granules are heated on a charcoal block with a reducing flame until the copper becomes a glowing orangish color.

4) After the metal is air cooled, place in a bath of hot sulphuric acid. Rinse with water and let dry. Because the granules are not permanently jointed, it is important to handle the whole piece with care.

5) Cover the metal with flux, dry and place in a graphite crucible and pack with powdered charcoal. Place in a furance of kiln until the temperature reaches slightly above 1056°C. Remove from heat, air cool and rinse in sulphuric acid and water. At this point the copper granulation process is completed.

The copper granulation temperature, slightly above 1056°C, is very close to the melting temperature of copper which is 1084.5°C. Knowing the exact temperature of the copper object placed in the kiln or furnace is essential. If possible, use a thermocouple (chromel-alumel) and a student potentiometer or similar device to monitor the temperature. Place the thermocouple on or near the copper object in the graphite crucible. If the use of a thermocouple is not possible, make test pieces of copper granulation and carefully observe the temperature of the creation of the granular joint by a pyrometer or some other instrument or method. Pyrometers do not present an accurate temperature of objects in a particular position in a furnace or kiln. ■

The following are health precautions to be taken when working with copper granulation:

1. An exhaust vent should be used with the kiln. Incomplete combustion from this operation could produce carbon monoxide fumes.
2. Pickle fumes should be avoided—either switch to unheated acid or use exhaust ventilation and a respirator for acids. The exhaust system should be constructed of material that will not be corroded by the acid. The respirator should be specifically for acids, with new filters as per the manufacturer's instructions. Also wear eye protection, rubber gloves and an acid-proof apron.
3. Antimony fumes should be avoided. Recent research indicates that these fumes may be more harmful than was previously thought. Much of the occupational hazard from antimony is hard to place because when the worker is exposed to antimony he is also exposed to other fumes that occur because of impurity in the parent metal or incomplete combustion. (Frequently there are arsenic fumes and these may be responsible for masking hazards created by antimony.) The TLV (threshold limit value) for antimony and compounds is .5mg/m^3. Antimony exposure can result in the following symptoms: 1) irritation of eyes and nose; 2) flulike symptoms—nausea, vomiting, diarrhea, muscle aches and pains; 3) chronic dermatitis; 4) anemia. People who work regularly with antimony should have regular medical check-ups that include: blood count, electrocardiagram and urine test. Be sure to inform your physician of the material with which you work. Until something more conclusive is proved, it is recommended that the fumes from antimony be avoided.
4. Cadmium fumes are known to be hazardous—the fumes should never be inhaled. Excessive exposure, which can occur in the span of several hours, can cause kidney damage, flulike symptoms and high blood pressure.

—Linda Weiss-Edwards

Health Hazards Questions & Answers

by Linda Weiss-Edwards

Dear Linda,
You are doing a great service by persevering the study of health hazards in your column in *Metalsmith.* The language of toxicology tends to be arcane, to say the least, and you apparently have the tenacity to not let it get you down. Congratulations!

Now, having said that, and recalling that one should beware strangers from the east bearing gifts (or unsolicited compliments), yes, I do have a question. It is probably a tough one. Have you looked into the subject of the disposal of plating salts, especially cyanides? There seem to be two viewpoints: 1) What is legal and responsible (EPA approved, as well as local ordinance, etc.); and 2) What is convenient—it is probably possible to flush a pound of cyanide down the toilet and get away with it in many towns around the country, but this is irresponsible (and if you have a septic tank, it is plainly foolish). Then there is the process of "bombing"—brightening gold using hydrogen peroxide and sodium cyanide solution. What do you do with the leftovers, not to mention the washings? I live in a rural area where I could, if I wanted to, simply dump the stuff on the ground and get away with it, but I have no desire to start my own private Love Canal. Obviously, gold salts go back to the refiner, they are not interested in copper or silver leftovers, or cyanide used in metal surface treatments. What should be done with used cyanide solutions? Do you have any suggestions? I'm sure many of your readers would be interested.

Several things that I would like to point out: 1) Working with, and attempting to neutralize, acids will produce harmful acid mists and fumes. Adequate ventilation should be used, and the craftsman should wear a respirator, rubber gloves and eye protection. Many home/studio ventilation systems have not been designed to withstand the corrosive nature of acid mists and fumes. All personal protective equipment should be specifically for acid mists, it is not effective to wear a respirator or rubber gloves that were designed for another purpose. 2) Do not just put a jar of acid waste material in your trash can! It can become an inconsiderate unknown hazard to the garbage collector and the people who work at the sewage-treatment facility. Check for local regulations on this by calling your local municipal sewage-treatment facility. 3) Undiluted acid that has not been chemically neutralized will probably be corrosive to your plumbing system. It is also very likely that even the neutralized acid solutions, since they are usually saline in nature, will also be corrosive to your plumbing system. 4) Very large quantities of acids can be handled by companies who specialize in hazardous waste disposal. They will require the waste to be sealed in a barrel which they will pick up and transport to a Class I (or Class A) land fill. At the land fill, if the waste is in liquid form, it must be drained from the barrel. Class I land fills are designed and built to prevent hazardous liquids from leaching into the ground and contaminating the local water table.

The major drawback to this type of hazardous waste disposal is that most of us do not work with large enough quantities to economically justify this means of disposal. Some of us would be willing to personally take our own small quantity of toxic waste to a Class I land fill, but they are not always conveniently located. According to my sources, none exists in the whole state of Arizona or Colorado. So, again, the solution seems to be to contact your local waste-treatment facility.

Here are a few things I have found out on my own: 1) The Environmental Protection Agency has a variety of toll-free "hot lines." The number for the "Hazardous Waste Office" is (800) 424-9346. 2) I was told by the EPA/HWO that unless you exceed 1000 kilograms of hazardous waste discharge in any one month, federal laws do not apply to you. (Local laws may differ but probably are similar.) 3) It is legal, but probably unwise to flush wastes into a septic tank. It is more prudent to take the acid that you wish to dispose of to the nearest municipal sewage treatment plant, or flush neutralized and diluted acids into a system that leads to a municipal sewage treatment plant. If that's not possible, there are simple chemical manipulations that can make most acid wastes less harmful.
—Carroll A. Smith

Dear Carroll,
Thank you for the compliments, questions and results of your inquiry. Upon calling the EPA/HWO toll-free number, I received the same information that you did. However, when I called the San Francisco office of the EPA, I spoke with Fred Kreeger who was more specifically helpful. He also put me in contact with a chemist at the San Francisco EPA office who was very informative.

Most of us artist/metalsmiths/goldsmiths/silversmiths do fall into the category they classify as "small quantity users," and thus we are exempt from EPA regulations. Nonetheless, I'm sure many of us would like to do what is healthy, safe and correct for ourselves and the environment.

It was also suggested to me that we should ask our supplier about disposal, neutralizing or recycling acid wastes. But frequently I find that the supplier is nothing more than a salesman with little, or no, knowledge about health and safety. Perhaps we could propose that the supplier set up disposal/recycling in conjunction with his distributor. Since it would require storage space and supervision time, the supplier could figure out a reasonable fee to charge for facilitating this service. There really is no reason for us to expect any supplier to provide this service merely for the convenience of his customers. By charging a fee, the supplier can relieve the craftsperson of the disposal dilemma and make it worth his time and overhead expense for the storage space required.

To dispose of the acid waste material in this way, one would return it back to the supplier in the same container in which it was purchased, sealed with a tight-fitting lid. Or, in the case of something like Sparex, which is purchased in a dry, granular form, the supplier could provide an appropriate container for returning the liquid waste. Many stores will not have the integrity or sense of responsibility to the environment, or to their customers, to want to be involved in this procedure—with, or without, the profit motive. It is within our power, as consumers, to insist that our suppliers provide this service. The craftsman should also understand that whatever it costs the supplier to provide this service, assuming it is realistic and reasonable, it will surely be more economical and practical than each individual craftsman trying to dispose of the acid waste material independently.

As I further elaborate on the specific acids, and the recommended means of neutralizing them, keep in mind the above paragraphs 1 and 3, and that when acid is to be diluted with water, *always add the acid to the water,* never add the water to the acid. The following procedures were recommended to me by a chemist with the EPA, however, it must be understood that each individual craftsman undertakes to work with acids in his own studio at his own risk. These procedures are intended only for neutralizing and disposing of very small quantities of acid waste solution, i.e., one quart maximum.

Hydrofluoric This acid is primarily used by enamelists to etch glass. In most circumstances, it may be used up until it evaporates, then, rinse out the container with *lots* of fresh water. The container may then be disposed of with your ordinary trash.

Hydrochloric What you are essentially doing when neutralizing hydrochloric acid is converting it to sodium chloride (ordinary table salt). Fill a large, 1 gallon, plastic pitcher half full of water (½ gallon H_2O). To this, *slowly* add a maximum of 1 cup of hydrochloric acid solution. In another, very large, 3 gallon, plastic basin, place about ¼ to ½ cup baking soda and 1 gallon fresh water. Into this basin, *slowly* pour the diluted acid solution from the first, 1 gallon, pitcher. Pouring it slowly will help to minimize the fizzing, bubbling and fumes. The mists, or fumes, produced by this fizzing is primarily carbon dioxide. Once the fizzing has subsided, the contents of the large basin may then be flushed, with copious amounts of cold running water, down the drain.

Sulfuric Acid, Sparex and Nitric Acid. These can all be diluted, neutralized and disposed of in the same manner as hydrochloric acid (in separate containers, and

not at the same time, of course). This process of neutralizing converts sulfuric acid to sodium sulfate, a compound similar to epsom salts. Nitric acid is converted to sodium nitrate which is used as a commercial fertilizer.

The chemist that was advising me had had no experience with Aqua Regia (nitric and hydrochloric), he advised me to consult with a chemist who specialized in explosives when I inquired about the possibility of neutralizing this acid combination. He also cautioned that the fumes could be very detrimental to your health, and could cause cellular damage which may lead to lung damage.

Sodium Cyanide and Cyanide would both have to be taken to a publicly owned treatment works (municipal sewage plant) or returned to a supplier. Sodium cyanide is an inorganic salt, not an acid. Cyanides have definite toxic properties; this is what is used in the "gas chamber." *Do Not Ever* combine cyanide, or its waste, to any other acid, or its waste—this would be deadly. Cyanide, when mixed with any other acid will form hydrogen cyanide which is an *odorless* gas that is deadly. (This could happen accidentally if a piece was not thoroughly rinsed off and neutralized between a pickling process and a cyanide process.) Sodium cyanide mixed with tap water will produce fumes that will make you violently ill. Drinking this would produce death—Jonestown style. So, please do not dump cyanides down the toilet or sink, or leave any contaminated container around that might accidentally be used for drinking. The advising chemist also couldn't imagine anyone working with the combination of hydrogen peroxide and sodium cyanide, as you mentioned that you use in the "bombing" procedure. He sounded quite horrified, stressed the danger and recommended using both ventilation and a respirator.

Submit questions for this column to Linda Weiss-Edwards, P.O. Box 1032, Sausalito, CA 94966.
The author of this column assumes no liability for the processes, procedures and precautions recommended herein.

Book Reviews

The Complete Metalsmith, an Illustrated Handbook by Tim McCreight, Davis Publications, Worcester, MA, 1982. 150 pages, handwritten with line illustrations, $9.95 paperback (spiralbound)

Many fine books have recently been published for the serious student of metalsmithing. Tim McCreight's new book is a tasty smorgasbord of diverse and varied metalsmithing skills.

At first glance, the book is clearly an important new achievement in metalsmithing literature. At second, it is obvious that a lot of knowledge, thought and planning went into making it not only a wealth of valuable information, but also a practical and fun-to-read benchside companion.

Tim McCreight not only displays his technical mastery of metalsmithing, but also his superb illustrations which are bold, clear and easy to comprehend. In addition, the author is a gifted and articulate teacher, presenting sometimes complex theoretical and technical information in language that is both lucid and comfortable.

Each of the chapters addresses a basic metalsmithing concept: Materials, Shaping, Connecting, Casting, Stones, etc. Each begins with basic descriptions and rules, followed by theory and basic techniques, and then more sophisticated skills. The chapter on Connecting, for example, first describes the theory of soldering, seven essential rules, and then a list of likely problems. Next is a thoughtfully distilled metallurgical explanation of soldering. The chapter goes on to present sections on safety, fluxes, flames, soldering variations, pickles, as well as a demystifying discussion of fusion, diffusion and eutectic bonding. Also included are sections on rivets, tabs, adhesives and more, all of which are augmented by drawings, charts and suggestions for further reading.

The informal yet informational manner of the book is flavored with thought-provoking proverbs, useful when challenged by the task of mastering the medium. My favorite, from Aristotle, appears on page 19: "Well begun is half done." After reading and understanding the contents of this fine book, it would be difficult to begin otherwise.
—Alan Revere

Jewelry Making for Schools, Tradesmen, Craftsmen by Murray Bovin, enlarged and revised May, 1979 by Peter Bovin. Bovin Publishing Co., 68-36 108 St., Forest Hills, N.Y. 11375. 287 pages, $16.50 cloth; $12.95 paper

It would be inappropriate to review this book without including a short description of the craft environment of the early 50s, when it was first published. World War II was over, and the streams that would later form the current craft renaissance were merging.[1] Art jewelry makers were thinly scattered around the country and the constituency for books on jewelry making consisted of hobbyists, occupational therapists, returned veterans, industrial arts teachers, trade people and art students in the few schools that maintained jewelry shops.

There weren't many books to choose from. Some had been written in the early 1900s. The better-known authors were Henry Wilson, Herbert Maryon, Kenneth Winebrenner, Greta Pack, Louis Wiener and Rose and Cirino. Then there was Murray Bovin; and his book became the jeweler's oracle. If you wanted hard facts and clear-cut procedures, he had them. There was good reason for this. First, Bovin was an industrial arts teacher who taught jewelry making in a New York high school. He was a product of a tradition that placed a lot of value on the thorough mastery of technical knowledge and skills (unfortunately, esthetics tended to suffer from benign neglect). Second, Bovin was not just a shop teacher who wound up in a jewelry shop when the laws of chance could just as easily have deposited him in a woodworking or printing shop. He had a special love for the field and he haunted the workshops and supply houses in the New York commercial jewelry trade. He asked endless questions, took pictures, made sketches and watched stone setters, casters, platers, polishers and engravers at work. When something got into his book, it was because that was the way it was done in the trade. He blended the theoretical, culled from the existing literature, with the practical, based on the hard realities that the jewelry trade lived with.

Murray Bovin made a good book, and if the loyalty of the marketplace is any indication, it is still a good book. It has gone through numerous printings, revisions and enlargements. The latest, the topic of this review, was made in 1979, and from the looks of it, it should do well.

I have a 1959 revision in my library and curiosity tempted me to compare the two. At 278 pages, the new book is almost twice as thick as the old one. Some of the additional material is in the form of an enlarged section illustrating the work of contemporary jewelers. Most of the new material is designed to keep pace with technical developments in jewelry making in the last decade or so. Consistent with past performance, this edition includes processes found in industrial as well as academic and studio settings. In the new book you will find sections on stripping and bombing, barrel tumbling, photoetching, married metals, mokumegane, reticulation, granulation, electroforming and refining and alloying gold. As usual, emphasis is placed on trade practices, so stone setting and construction and repair of different types of jewelry are well covered. Jewelers who are ready to break away from the ivory tower and try to make their craft pay the rent will appreciate the straightforward, nonpoetic, factual language and the numerous photographs and drawings. A lot of information is packed into those pages. Finding it is made easy with the help of a good table of contents, index and bold-type titles introducing every topic.

My complaints are minor. No one book has everything, and that is why it pays to collect a basic library of jewelry books. Murray Bovin's should be in it, but it should be near your bench, not in the bookcase.
—Bernard Bernstein

1. For a good historical overview of the period, see Lois Moran's report, "American Metalsmithing in the 1940's and 50's," *American Craft Magazine,* Feb.-Mar. 1983, pp.86, 87

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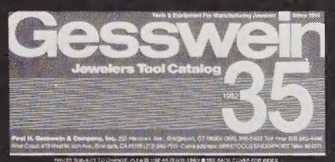

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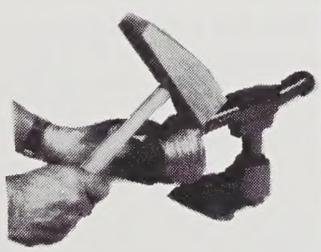

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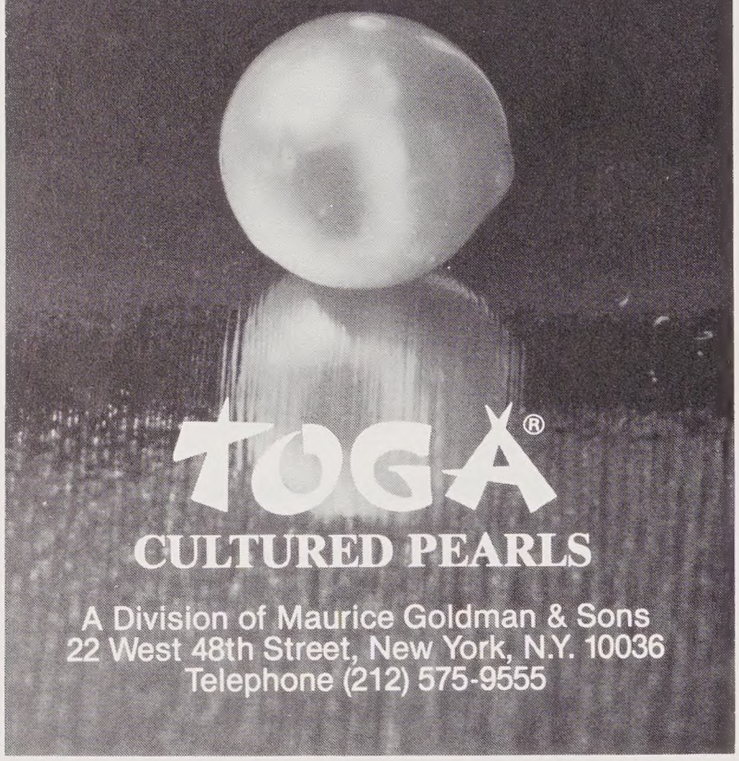

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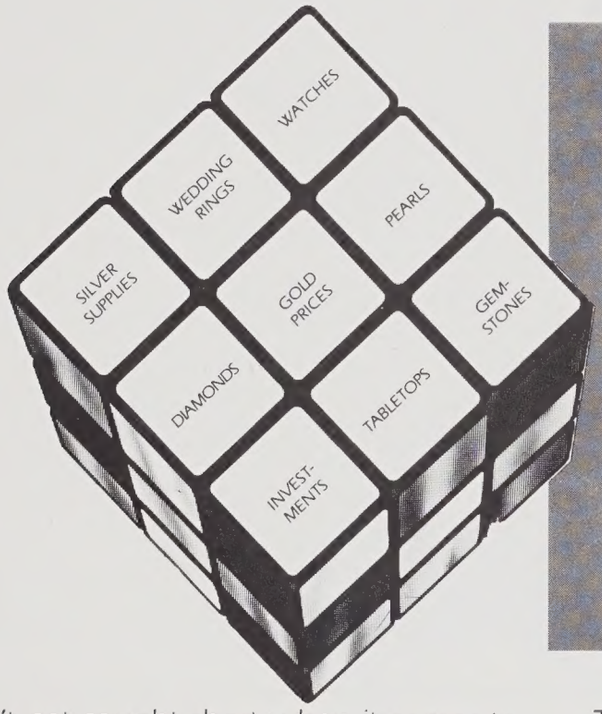

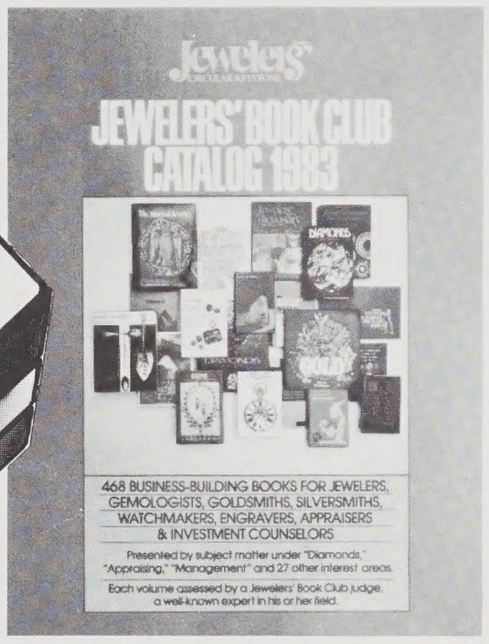
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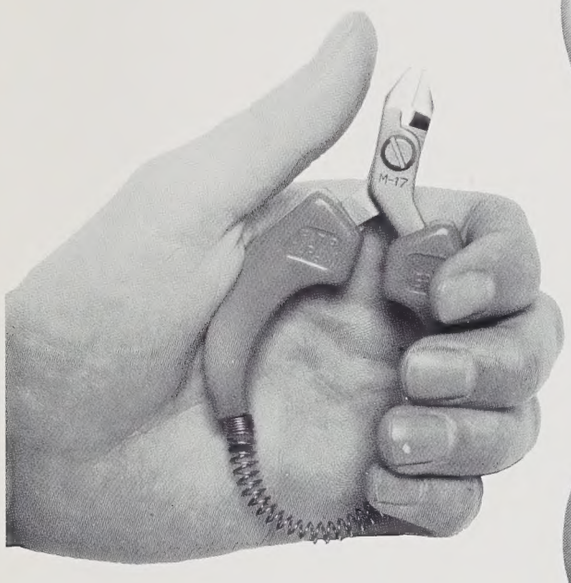

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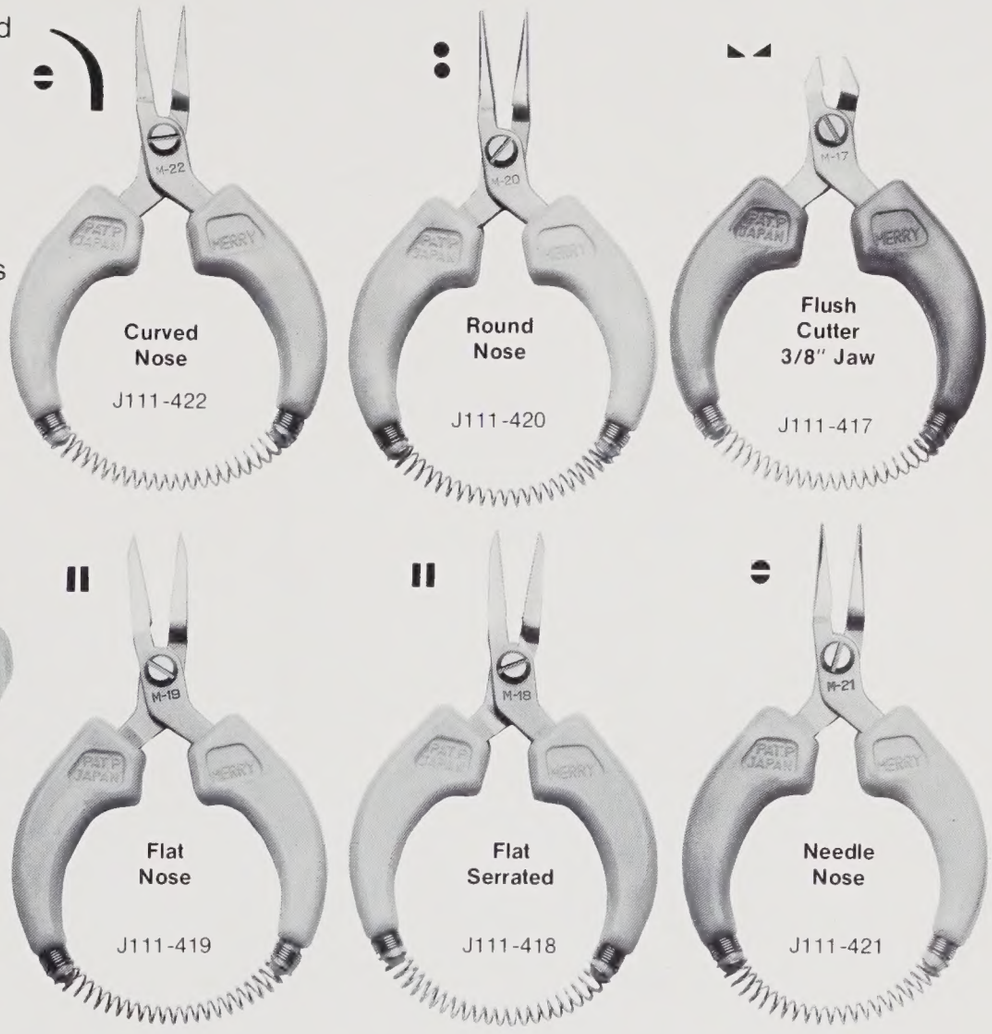

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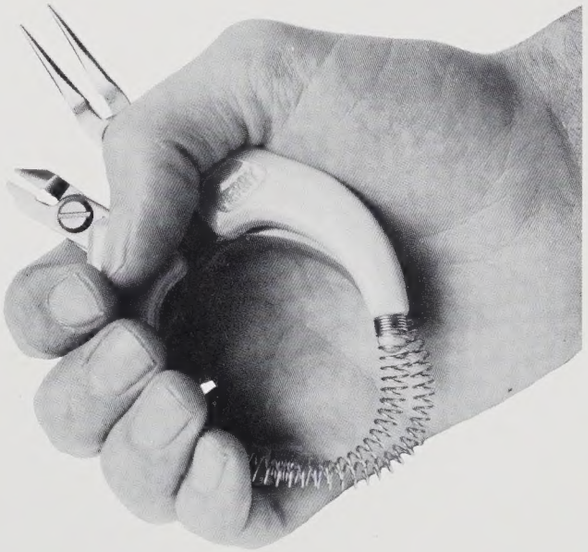

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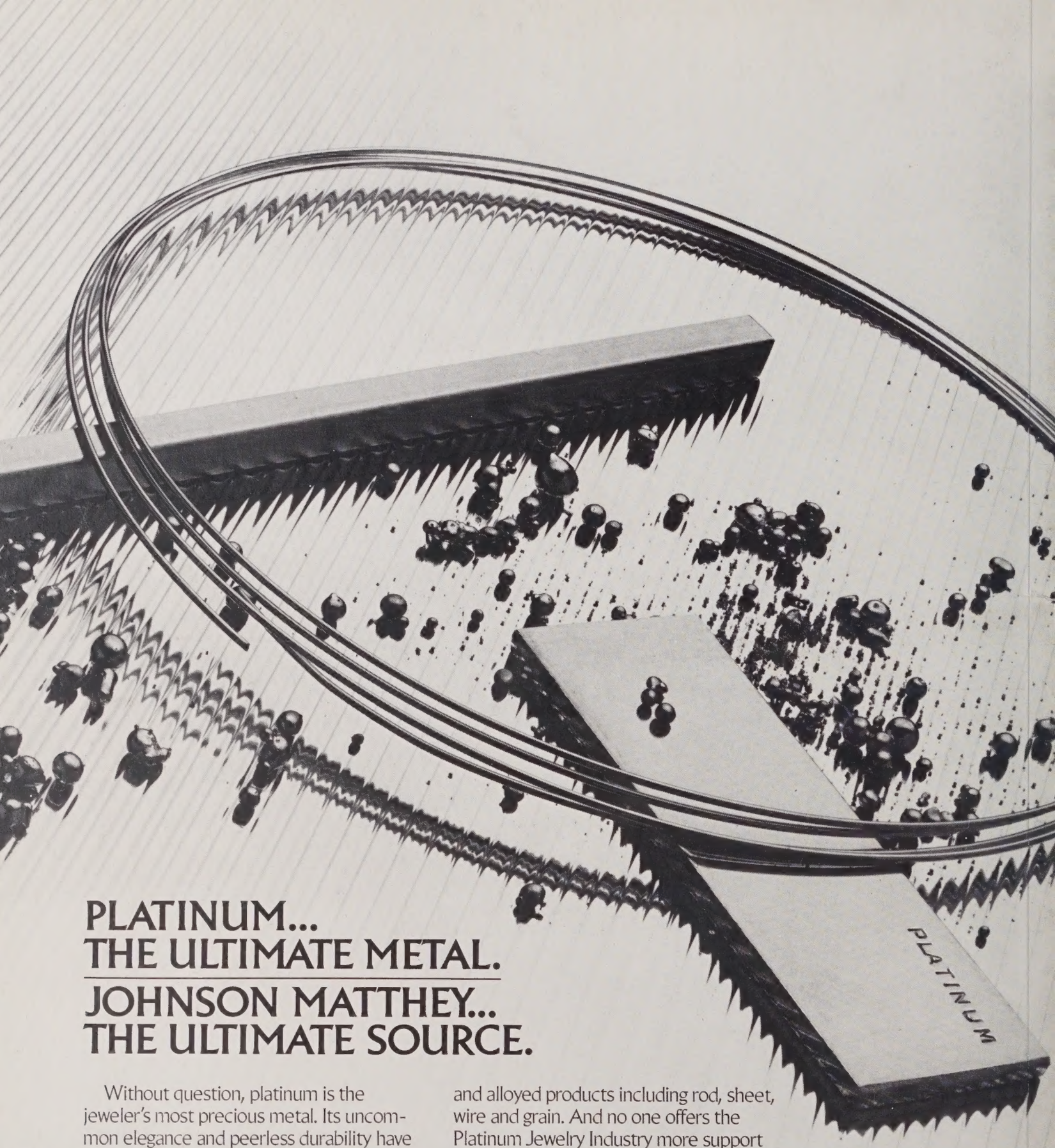

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